Thematic Roles and Syntactic Structure*

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I. Introduction: the Linking Problem

One central task for any theory of grammar is to solve the so-called "linking problem": the problem of discovering regularities in how the participants of an event are expressed in surface grammatical forms and explaining those regularities.

Suppose that one adopts a broadly Chomskyan perspective, in which there is a distinction between the language faculty and other cognitive faculties, including what Chomsky has recently called the "Conceptual-Intensional system". Then there must in principle be at least three stages in this association that need to be understood. First, there is the nonlinguistic stage of conceptualizing a particular event.[1] For example, while all of the participants in an event may be affected by the event in some way or another, human cognizers typically focus on one or the other of those changes as being particularly salient or relevant to their interests. This participant is taken to be the "theme" or "patient" of the event, perhaps in some kind of nonlinguistic conceptual representation, such as the one developed by Jackendoff (1983, 1990b). Second, this conceptual/thematic representation is associated with a linguistic representation in which the entity seen as the patient of the event is represented as (say) an NP that is the direct object of the verb that expresses what kind of an event it was. This is the interface between language and the conceptual system. Finally, there is the possibility of adjusting this representation internally to the language system, by way of movements, chain formations, Case assignment processes, or whatever other purely syntactic processes there may be. For example, the NP that represents the theme and starts out as the direct object of the verb may become the subject if there is no other subject in the linguistic representation, either because there was no agent in the conceptual representation (as with an unaccusative verb), or because it was suppressed (as with a passive verb).

Since there are at least these three stages between an event and a surface-linguistic description of it, there is room for a good deal of complexity in theory and analysis. Therefore, most syntactic theorists assume that at least one step in the association is relatively trivial. In part, this is a tactical move, an effort to cut down the number of analytic choices that a theory must make in order to develop an analysis of any particular phenomena. However, the need for restrictions also seems to be empirically motivated by the fact that there are in fact important linking regularities both within and across languages. How extensive these regularities are is a matter of debate, but to the extent that they exist, there must be a fair amount of rigidity in the system.

Outside of Chomsky's Principles and Parameters (P&P) framework, the most popular way to constrain the linking problem is at the third stage: to say that there is essentially no difference between the initial grammatical representation and the surface grammatical

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[1]Here in order to be explicit I am taking a "language production" viewpoint, in which the conception is given and the problem is to find a suitable linguistic expression of it. The same stages would be run through in reverse if one took a "language perception" viewpoint, where the linguistic expression (i.e., the PF) is given and the problem is to find the matching conceptual representation (LF). Thus, no inherent directionality should be assumed in these associations.

representation. This choice leads to the various "monostratal" theories of grammar, including Lexical Functional Grammar, the various Phrase Structure Grammars, Role and Reference Grammar, and others. Since the syntax proper is so tightly constrained, these approaches tend to take on a rather asyntactic flavor, with much of the explanatory burden being carried by the lexicon and/or the semantics rather than syntax. As such, they shade into functionalist approaches, which downplay the existence of syntax as something distinct from semantics, discourse, pragmatics, and diachrony.

The opposite choice has been predominant within the P&P approach. This approach allows nontrivial syntactic derivations internal to the language faculty, and instead attempts to constrain the interface between conceptual representations and syntactic representations in a particularly tight way. One widely-cited expression of this leading idea is the following, from Baker (1988a:46):

(1) *The Uniformity of Theta Assignment Hypothesis* (UTAH)
Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

Part of Baker's motivation for introducing this principle was to put teeth into the generative theory of that time (the early 1980s). Generative theory then as now aspired to achieve explanatory adequacy by having a very tightly constrained view of what syntax could do. However, in practice the result of this approach was often not deeper analyses of interesting phenomena, but rather a banishing of those phenomena from the domain of syntax—typically into the realm of the lexicon. Within the terms of the theory, this seemed regrettable: if one is going to have a nontrivial syntax at all, then that syntax should be required to pull its own weight. The UTAH, then, was an attempt to identify a domain in which the answer to analytic questions must be a syntactic one.

This being said, the UTAH was clearly a working hypothesis, not a full-fledged principle. Baker (1985, 1988a) purposely left it vague and flexible in at least three important respects. First, it was presented without an explicit theory of thematic roles that could define when two NPs count as having the same thematic role. Thus, even holding the UTAH constant, a fine-grained thematic theory that distinguishes many thematic roles would have different implications for syntactic structure than a coarse-grained thematic theory that distinguishes only two or three "macroroles" (see Pesetsky (1995:ch. 2, 3)). Similarly, I did not present an explicit theory of syntactic positions that defined what was meant by "identical structural relationships." Strict identity of position sounds like a very strong condition, but one can replace the word "identical" in (1) with the word "equivalent" and it then becomes clear that one must define which syntactic positions count as equivalent (see Larson (1990:600-602)).[2] Finally, no explicit rule was given to match thematic roles to structural positions beyond a few simple and relatively clear-cut cases. As a result of this vagueness, the UTAH has become something of a inkblot-blot test, into which its various proponents (and opponents) can read what they wish. As a result, the UTAH exists in a variety of different versions, the advantages of which have not been systematically investigated.

With this background in mind, the current article has a threefold goal. First, it reviews some of the evidence that something like the UTAH is correct, both for English and for other, superficially very different languages. Second, it seeks to give more specific content to the UTAH, clarifying certain points left unresolved previously and discussing differences between alternative version of the UTAH. In particular, I consider which thematic role distinctions the UTAH is sensitive to, whether an "absolute" or "relative" interpretation of the UTAH is

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[2]For example, Larson correctly points out that Baker (1988a) does not hold to the strictest imaginable sense of the UTAH in his analysis of the passive. Baker claimed that the agent role was assigned to the specifier of IP in normal active sentences, but to the head of I containing the morpheme -EN in corresponding passive sentences. These are not *identical* structural relationships, but they were held to be *equivalent* positions inasmuch as both are "minimally external" to the VP (outside VP but inside the next highest maximal projection).

appropriate, and whether linking is primarily sensitive to thematic role distinctions or aspectual distinctions. Finally, I discuss how the UTAH fits into Chomsky's (1993, 1994) Minimalist Program for linguistic research, an issue that has not received much explicit attention. I argue that inasmuch as the UTAH calls for a simple correspondence between a linguistic representation and a Conceptual-Intentional one, it fits well with the Minimalist tenet is that there should be "optimal" interfaces between language and other cognitive systems. Indeed, once the UTAH is recast so as to fit into this somewhat different theoretical environment, it reduces to a matter of "virtual conceptual necessity."

2. External and Internal Arguments

Let us begin with the vague UTAH in (1) and see how one could evaluate its validity. To do this, it is helpful to break the linking problem down into two parts: first, there is the matter of deciding which of the participants in a given event is to be expressed as the subject of the sentence; second, there is the matter of deciding which of the remaining participants is to be expressed as the direct object (if any). Any remaining participants are then typically expressed as oblique NPs that appear with adpositions or Case markers that express their thematic role rather directly.[3] In this section, then, I begin by considering the matter of subject choice in two-place verbs. This is the least controversial aspect of linking theory: there is wide agreement that agents rather than themes are chosen as subjects in most languages. However, there is still some disagreement as to whether this rule of thumb is valid for all clauses and all languages. Moreover, looking at this issue with some care will also give us a valuable model of how to proceed when we come to the much more controversial question of how internal arguments are linked.

2.1 English

Consider morphologically simple (i.e., nonpassive) verbs in English that describe simple two-participant events involving an agent and a patient (or theme). Virtually every such verb expresses the agent of the event as its subject as shown in (2a); there are no verbs that follow the pattern in (2b), where the theme of the event is expressed as the subject.

(2) a. John hit/built/found/pushed/bought/cleaned/broke/described the table.
b. *The table plit/puilt/vound/fushed/pought/bleaned/proke/tescribed John.

Furthermore, a structural relationship holds between the patient-object and the verb in English that does not hold of the subject and the verb. In simple sentences, the object but not the subject must be (right-)adjacent to the verb. Moreover, the object and the verb constitute a unit to the exclusion of the subject for processes like VP-deletion, VP-pronominalization, and VP-fronting.

(3) a. John [$_{VP}$ hit the table] and Bill did [$_{VP}$ (so)] too.
John said he would hit the table, and [$_{VP}$ hit the table] I guess he did --.
b. *[$_{XP}$ John hit] the table and [$_{XP}$ (so)] did the chair.
*John said he would hit the table, [$_{XP}$ John hit] I guess -- did it.

Finally, the agent-subject "has prominence" over the patient-object in a variety of ways involving anaphora, coreference, and quantification. Thus, pronouns and anaphors contained in the object can be referentially dependent on the subject, but not vice versa.

(4) a. John$_i$ washed himself$_i$
John$_i$ washed pictures of himself$_i$

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[3] Suppressed here is the possibility that the various PPs might also differ in their syntactic positions. I suspect that this is the case, but in this article I concentrate on goals and other paths, except for a brief remark about instruments and comitatives in section 4.

Every man_i washed his_i car.
*He_i washed John's$_i$ car. (out by Condition C)

b. *$Heself_i$ washed $John_i$. (out by Condition A)
*Friends of $himself_i$ washed $John_i$. (out by Condition A)
*His_i friends washed every man_i . (out by Weak Crossover)
John's$_i$ friends washed him_i.

Facts like these from English and similar languages motivate the twin claims of P&P linking theory built into the UTAH: (i) that agents are always (underlying) subjects, and (ii) "subject" is a structural notion—it is a position in phrase structure that is outside the VP (see (3)) and hence "higher than" (c-commanding) the position of the patient/object (see (4)).

The one area of controversy regarding subject selection in English concerns predicates describing psychological states. In this particular semantic domain, there do seem to be (nearly-)synonymous verbs that have opposite linking patterns, as shown in (5).

(5) a. John likes long novels.
Peter fears dogs
Mary worries about the ozone layer

b. Long novels please John.
Dogs frighten Peter.
The ozone layer worries Mary.

The general Chomskian framework allows for three possible interpretations of this fact: (i) the data in (5) shows that the UTAH is false, and different predicates require different linking patterns as an idiosyncratic lexical property; (ii) the (a) and (b) sentences have similar underlying configurations, but at least one of them (probably (b)) involves a nontrivial syntactic derivation; (iii) the thematic roles in the (b) sentences are actually different from those in the (a) sentences.

In fact, no one has advocated option (i) in the recent literature, as far as I know. It seems wrong to infer from the fact that a restricted class of predicates appear to be idiosyncratic that all predicates are idiosyncratic. On this view it would be hard to explain the observation that most verbs work predictably, apart from this semantically coherent domain.

Option (ii) is advocated in Belletti and Rizzi's well-known article (1988), as well as much work in the Relational Grammar tradition. Indeed, there are some important things to be said in its favor: Belletti and Rizzi show that sentences like (5b) have a number of syntactic peculiarities in Italian (and also English) that can be explained if they are derived by moving the "theme" argument into the subject position syntactically. Moreover, their analysis is compatible with a somewhat weakened version of the UTAH, as they point out. I return to a brief discussion Belletti and Rizzi's theory in section 4.2.1 below.

However, the correct option seems to be option (iii): denying that *long novels* and *John* have the same θ-roles in both (5a) and (5b). This nonsyntactic approach to the problem of psych verbs is defended by Pesetsky (1987, 1995) and Dowty (1991:579-80, 586-87). Dowty in particular sketches an explanation for why only this class of verbs seems to be so variable in its linking properties: neither participant in the event is an obvious choice for an agent or a patient. John is an animate and sentient being, which would tend to make him like an agent; on the other hand, the long novels cause an emotional reaction in John, making them like an agent. This ambivalence as to what is really the agent underlies the alternative linkings. Moreover, Dowty points out (citing William Croft) that the (b) examples can have an inchoative change-of-state reading, but the (a) examples cannot. Pesetsky (1987, 1995) points out another subtle difference between the two, that comes out particularly clearly in examples like (6).

(6) a. John is angry at the article.

b. The article angered John.

Whereas (6a) clearly asserts that the article is the target of John's anger, (6b) does not: here the article is the cause of John's (change of) emotion but not necessarily the target of it. According to (6b), the article could in fact be a brilliant exposé of government corruption that makes John angry at the authorities, even though he likes the article very much. Putting together these pieces, we find that John is seen as undergoing a change of state and hence is a patient in (5b) and (6b), while the article is seen as a cause in (5b) and is in this respect like an agent. Indeed, Pesetsky points out that verbs like *please*, *frighten*, and *anger* are morphologically causative forms in many languages, including Japanese. If this is the correct thematic analysis, the linking patterns are expected: the cause of the event maps onto the subject position in (2), (5b), and (6b), and the patient/theme of the event uniformly maps onto the object position. Thus, these sentences are thus consistent with the UTAH even without any syntactic derivation. The apparent problem for the UTAH with psych verbs is largely attributable to the fact that the thematic roles have been misdiagnosed.

While this approach works well for the *frighten*-class psych verbs, something more must be said about subject selection in *fear*-class psych verbs. While it is true that there is no reason to say that *John* refers to a patient/theme or *long novels* refers to a causer in these sentences, at first glance is not much reason to say the opposite either. The standard view has been to say that *John* is an experiencer, where that is a thematic role distinct from agent/causer (Belletti and Rizzi 1988, Grimshaw 1990). There would then be a linking rule stating that experiencers can be expressed as subjects when there is no causer/agent. This idea could be made compatible with a weakened version of the UTAH under certain conditions (see section 4.2.1), but it would mean that syntactic structure is coarser-grained than thematic structure. Because of this, I tentatively adopt a slightly different approach, inspired by Dowty (1991). Dowty suggests that because John is sentient (an experiencer), he is in that respect like a canonical agent; indeed he is more like a canonical agent than any other participant in the event.[4] For this reason, *John* is the subject of a predicate like *fear* by the usual agent-to-subject rule, but the term "agent" is now understood as a fuzzy, prototype notion rather than a categorical one. (In fact, "agent" is not a very felicitous term; a more accurate one would be Levin and Rappaport Hovav's (1995) "internal cause", which includes agency as a special case.) Indeed, it is a property of John's psychological make-up—though not necessarily his will—that causes him to respond in a particular way to dogs; indeed, we might be tempted to consider him a coward. If these remarks are correct, then *fear* and *frighten* are both agent-theme verbs, once these notions are understood in a broad enough way. The apparent alternation comes from the fact that there are two ways these notions can sensibly apply to describe a certain eventuality, although what exactly is expressed is subtly different depending on the choice. Finally, it is a consequence of this approach that *fear* should behave like an ordinary transitive verb in most respects, and this seems to be true (Belletti and Rizzi 1988, Grimshaw 1990).[5]

2.2 Ergativity

Next, let us consider to what degree the principles of subject choice seen in English are universal. Suppose, contrary to the UTAH, that the association between thematic roles and syntactic positions were arbitrary and variable, either because agents are not necessarily subjects, or because subjects are not necessarily "external" positions. Then one would expect that some natural languages would make use of exactly the opposite association, in which the agent is

[4]There may also be an instructive comparison between *fear*/*like* verbs and "representation-source" clauses such as *John memorized the poem*, discussed by Dowty (1991:569-70). Dowty argues that the subject and object of *memorize* are relatively ordinary agents and patients. *John liked the poem* is similar in that it means that John created (or at least acquired) a particular kind of mental representation of the poem—a positively valued one.

[5]Perhaps other transitive verbs with noncanonical subjects such as the goal-subject verbs *receive, inherit, own* can be handled in a similar way (see Dowty (1991:581) and section 4.2.1 below).

associated with the VP-internal object position, and the patient/theme is associated with the structural subject position, thereby having prominence over the agent. Marantz (1984) and Levin (1983) claim that this logical possibility is attested in so-called "deep ergative" languages, including Dyirbal (Dixon 1972) and a dialect of Inuktitut. Similarly, Dowty (1991:581-82) suggests that the basic rules for associating semantic arguments with grammatical functions are reversed in some ergative languages,[6] pointing out that if so, "this provides an extremely strong reason why we should not try to collapse the notion of P[roto]-Agent with grammatical subject and P[roto]-Patient with grammatical object . . . , or adopt a theory which necessarily correlates them in this unique way." Thus, whether or not there are any truly deep ergative languages is a crucial issue for the UTAH.

It is helpful to begin by imagining what a deep ergative language would look like. If everything else were held constant, the allowable syntactic dependencies in such a language should be exactly the opposite of those in a language like English. For example, the agent and the verb should form a unit to the exclusion of the patient for purposes of word order, VP deletion, VP fronting, and the like. Furthermore, the agent in such a language should be able to be referentially dependent on the patient, but not vice versa—the reverse of the typical English pattern in (4). Finally, in nonfinite clauses headed by a morphologically simple transitive verb, it should be the patient of the verb that is phonologically null and understood as controlled by an argument of the matrix verb, not the agent as in English. The question is whether there are any such languages.

It is clear that some languages have an "ergative" Case system, where the patient of a transitive verb appears in the same Case and/or triggers the same kind of agreement as the sole argument of an intransitive verb (called absolutive Case), while agents of transitive verbs have a distinct Case and/or agreement (called ergative Case). Assuming that the sole argument of an intransitive verb is necessarily its surface subject, this Case/agreement pattern invites the hypothesis that the patient of the transitive verb is also a subject. This hypothesis is reinforced by the facts that "absolutive Case" is often morphologically unmarked and absolutive agreement is generally the farthest from the verb stem, as shown in (7) and (8); in these respects it is like nominative in most Indo-European languages (Campana 1992, Bittner and Hale To appear).

(7) a. Payi yara-Ø paninyu. DYIRBAL
there man(abs) come
'The man is coming.'

b. Palan jukumpil-Ø pangkul yara-ngku palkan.
there woman(abs) there(erg) man-erg hit
'The man is hitting the woman.'

(8) a. (Uanga) qungujup-p-u-nga. GREENLANDIC
me(abs) smile-ind-intrans-1s
'I smiled.'

b. Anguti-p (uanga) urnip-p-a-a-nga.
man-erg me(abs) approach-ind-trans-3s-1s
'The man approached me.'

However, it is well-known since Anderson (1976) that in the large majority of ergative languages, the evidence that the patient of a transitive verb might be its subject is restricted to these superficial morphological facts: control patterns and referential dependencies still pattern in very much the same way as they do in English.

[6] In addition to Dyirbal, Dowty mentions certain Mayan languages. However, see Aissen (1995) for evidence that Tzotzil at least is not a deep ergative language.

Only in a small handful of languages such as Dyirbal and Greenlandic does the reversal seem to go deeper. For example, Levin (1983) points out that the unmarked word order in Dyirbal has the patient NP before the agent NP, which in turn is before the verb, as shown in (7b). If the patient NP is the syntactic subject, and the agent is the object, this is a straightforward instance of SOV word order—perhaps the most common kind across languages. If, on the other hand, the grammatical functions are interpreted the other way, (7b) would be an instance of basic OSV word order; this is a rare or unattested type. (Note, however, that the unmarked word order is the opposite in Greenlandic, as shown in (8b).) Second, Dyirbal has control(-like) purposive constructions in which there is a special subordinate verb form and a missing argument that is understood as coreferential with an argument of the first clause. Significantly, if the verb in the embedded clause is transitive, the missing NP must be the absolutive theme, not the ergative agent. Thus, Dyirbal can express the equivalent of (9a), but not (9b), whereas the facts in English are the opposite (see Dixon (1972) for the actual Dyirbal examples):

(9) a. The man$_i$ climbed up in order --$_i$ to see the bird. OK English, *Dyirbal
b. The man$_i$ climbed up in order for the bird to see --$_i$. OK Dyirbal, *English

Similar patterns pervade the grammar of Dyirbal: for example only absolutive arguments can be "shared" in coordination-like clause chaining constructions, and only absolutive arguments can be understood as the head of a relative construction. This last constraint is found in other ergative languages as well, including Greenlandic (Bittner and Hale To appear). Finally, Bittner and Hale (To appear:24-25) show that in Greenlandic VP operators such as negation take scope over the ergative Case agent but not the absolutive Case patient; again, this is the exact reverse of the pattern found in English.

However, while some grammatical properties seem to reverse in these languages, others do not, as pointed out in Dixon (1979, 1994:sec 5.3). Perhaps the most significant is that the patient phrase can contain an anaphor that is referentially dependent on the agent phrase as in (10), but the agent phrase cannot contain an anaphor that is dependent on the patient (see Bittner (1994:ch. 4), Bittner and Hale (To appear) for Greenlandic).

(10) Juuna-p qimmi-ni nirisip-p-a-i. GREENLANDIC
Juuna-erg dog-pl/3srefl feed-ind-trans-3s/3p
'Juuna$_i$ fed his$_i$ own dogs.'

Dixon also mentions that in control phenomena involving complement-taking verbs with meanings like 'can', 'try', 'want' and 'begin', it is always the agent argument of the embedded verb that is controlled, not the theme argument. Again, this holds in Greenlandic, with the minor complication that the matrix verb generally shows up attached to the embedded verb at PF (Bittner 1994).

Moreover, Baker (1988a:427-28) extends Dixon's list of invariant properties by pointing out that compounding and incorporation phenomena work the same way in both accusative languages and ergative ones (see also Mithun (1984)). It is well-known that the theme argument of the verb root can appear in English deverbal compounds, but the agent argument cannot: one can have *dish-washing*, but not **husband-washing (of dishes)*. Presumably this is another reflex of the fact that themes are objects and appear structurally close to the verb in English, but agents are not (Roeper and Siegel 1978, Sproat 1985, Di Sciullo and Williams 1987, Grimshaw 1990). If so, one would expect this pattern to reverse in a deep ergative language. However, it does not; incorporation is common in Inuit, but the incorporated argument is always understood as the patient, never as the agent:

(11) Juuna alla-mik ilinniartitsisu-siur-p-u-q. (Bittner 1994:67)
Juuna other-instr teacher-seek-ind-intrans-3sS

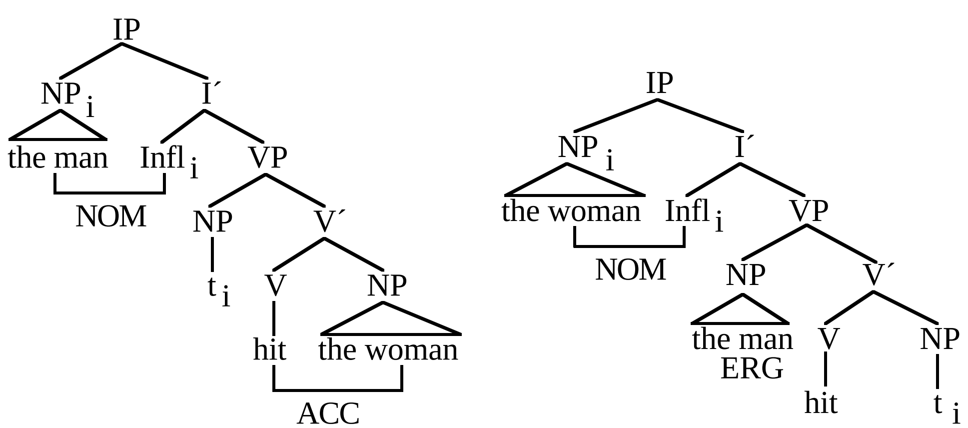
'Juuna is looking for another teacher.' NOT: 'Another teacher is looking for Juuna.'

See McKay (1975) for similar patterns in Rembarrnga, a morphologically ergative language related to Dyirbal.

On balance then, we see that some syntactic phenomena reverse in ergative languages, but others do not. Dixon (1994:233) criticizes Marantz (1984) and similar approaches to "deep ergativity" for their inability to capture this fact in a natural way. Instead, he claims that "the universal category of subject . . . plays a role in the grammar of every language." However, he distinguishes a second type of grammatical function, called a "pivot", which does differ significantly across languages: Dyirbal treats patients of transitive verbs together with the sole argument of intransitive verbs as pivots, whereas English treats intransitive subjects and the agents of transitive verbs as pivots. Pivots are distinct from subjects and belong to another layer of grammatical description, one concerned with the combining of clauses and coreference across clauses (see also Foley and Van Valin (1984)).

In fact, Dixon's insights translate rather directly into what has become the standard approach ergativity in the P&P framework.[7] For reasons that are quite independent of ergativity, it has become standard to assume that the agent argument of a transitive verb in English is a subject in (at least) two ways: it is base-generated as the specifier of a VP projection where it is directly theta-marked; it then raises to the specifier of an Inflectional head to receive (or check) its nominative Case. Thus, the agent is both the subject of VP and the subject of IP. However, these two distinct senses of subject may diverge, resulting in a "deep ergative" language. Thus, suppose that the basic projection of arguments is the same in languages like Dyirbal or Inuit, but the verbs in these languages cannot license accusative Case on the underlying object. Then, it is the patient argument of the verb, not the agent, that must move to the specifier position of IP to receive/check nominative Case and trigger agreement on I (Bok-Bennema 1991, Campana 1992, Murasugi 1992, Bittner 1994, Bittner and Hale To appear).[8] The agent NP, on the other hand, remains in the specifier of VP and receives ergative Case by some other means (researchers vary on the exact mechanisms here). Simple versions of the two basic clause structures are compared in (12), where I leave open the possibility that there are additional functional categories and/or a more complex VP-internal structure.

(12)
a. ENGLISH b. DYIRBAL/INUIT



[7]One exception to this near-consensus is Johns (1992), who argues for a position that is close to Marantz's "deep ergative" view of Inuktitut. However, the evidence for her account is primarily morphological, not syntactic.

[8]Essentially the same derivation has been proposed for "patient topic" constructions in Tagalog and other Austronesian languages by Guilfoyle, Hung, and Travis (1992). This captures the intuition that these languages are partially ergative in some sense.

Several of the peculiar-looking facts of ergative languages now follow immediately. For example, the movement of the patient past the subject shows up overtly in Dyirbal, in the form of unmarked Patient-Agent-Verb order. Similarly, it follows from these representations that agents are outside the scope of VP operators in English, whereas patients are in Inuit. Finally, the purposive inflection in Dyirbal can be analyzed as a special form of Infl that licenses "null Case", and hence its specifier must be a null element, perhaps PRO. This null element is then anaphorically dependent on the matrix clause. Plausibly relative clauses in Dyirbal and Inuit, and topic-chaining constructions in Dyirbal can be analyzed in a more or less similar way (see Bittner and Hale (to appear) for discussion of participial relatives).[9]

However, the structural reversal is not total on this account. In particular, the inner structure of VP is the same in both ergative and accusative languages on this approach. Thus, for linguistic phenomena that have the basic VP as their domain, deep ergative languages and accusative languages are expected to work very much the same. For example, the agent c-commands the patient before movement; hence the patient can be anaphorically dependent on the agent but not vice versa (see (10)). (The movement of the patient past the agent does not change this relationship if that is an A-bar movement; see fn. 9.) Similarly, we explain why noun incorporation patterns are the same in ergative languages as in others: noun incorporation is an alternative to movement to receive Case (Baker 1988a), and it takes place entirely internal to the VP. Within this VP, the patient is in a close enough relationship to incorporate into the verb, but the agent is not. Finally, it makes sense that control of complement clauses also acts in the same way, since this kind of control is known to be sensitive to the thematic roles defined over VP-internal configurations (see Bittner (1994) for some discussion).

In conclusion, this P&P approach can be seen as a formal development of Dixon's intuition that "subjects" are the same in all languages, while "pivots" vary. The P&P equivalent of Dixon's "subject" is "subject of VP", whereas the equivalent of "pivot" is "subject of IP." Crucially, this theory not only accounts for the fact that "subject properties" seem mixed in ergative languages, but it gives insight into exactly what mixtures one finds. Roughly, ergative languages differ from accusative languages in their A-bar processes (quantifier scope, relative clauses, topics) and Case-related morphology, but are similar in terms of A-processes (anaphora, incorporation, complement control). If this approach is correct, it shows that ergative languages are not counter-examples to the UTAH after all. Rather, the basic projection of arguments is identical in the two kinds of languages, and it is subsequent movement processes that differ.

2.3 A note on nonconfigurationality

Similar issues for the UTAH are raised by the existence of so-called nonconfigurational languages, although for reasons of space I cannot do more than indicate where this large and fascinating topic fits into the issues at hand. Whereas some of the familiar subject-object asymmetries appear to be reversed in deep ergative languages, in nonconfigurational languages such as Warlpiri (Australian) and Mohawk (Amerindian) they appear to be neutralized. Thus, patterns like (3) in English cannot be replicated in these languages and it is difficult, perhaps impossible, to find direct evidence for a constituent that contains the verb and the object-theme but not the agent-subject. Rather, the NP arguments of a simple clause can generally appear in any order (subject to pragmatic constraints), and any NP can be omitted in discourse (see Hale (1983), Simpson (1991), Baker (1991, 1995b) and references cited there). Moreover, the nonconfigurationality of these languages is not a purely superficial (PF) phenomenon, because in at least some languages, the asymmetries in referential dependency such as (4) are partially

[9]Another common property of ergative languages is that the absolutive NP can be extracted by various kinds of wh-movement whereas the ergative NP often cannot. This can be understood if one assumes that the movement of the patient NP to Spec, IP, although Case-driven, is actually a kind of A-bar movement (Campana 1992, Bittner and Hale To appear). Since the patient NP is the highest position in the clause, it can readily be moved further, but it blocks A-bar movement of the ergative subject past it, by some kind of Relativized Minimality (Campana 1992, Nakamura 1993).

neutralized as well (see Simpson (1991:177-182) for Warlpiri; Baker (1995b, ch. 2) for Mohawk). Thus, such languages again call into question the idea that subjects have consistent phrase structure positions distinct from objects.

However, just as the syntactic reversal of agent and theme is not complete in ergative languages, so the neutralization of differences between agent and theme is not complete in nonconfigurational languages. Typically, some subject-agent/object-theme asymmetries can still be found. Strikingly, the kinds of relationships that carry over unchanged to nonconfigurational languages are approximately the same as those that remain unchanged in ergative languages: agents bind anaphoric themes but not vice versa (Hale 1983), agents of nonfinite clauses are controlled (Hale 1983, Simpson and Bresnan 1983), themes and not agents are incorporated into the verb (Baker 1988a, Baker 1995b:ch.7), and so on.

These strong similarities suggest that nonconfigurationality should be approached in much the same way as ergativity. Thus, most P&P-based work on such languages assumes that the basic arguments of the verb project into the same initial positions within VP in nonconfigurational languages as in configurational (and ergative) ones. This allows the nontrivial similarities between the languages to be captured by the normal principles of Binding theory, control, and head movement.[10] Surface nonconfigurationality then arises because phonetically realized NPs in these languages do not necessarily—indeed in some cases *must* not—surface in their normal argument positions at S-structure/Spell-Out. This gives rise to the free word order of nonconfigurational languages, as well as some of their other seeming-peculiarities (Jelinek 1984). How this works out in detail probably varies a good deal from language to language. In mildly nonconfigurational head-final languages like Japanese, Hindi, and German, free word order seems to be the result of the leftward movement of NPs ("scrambling") (Saito 1985, 1992, Mahajan 1990, Webelhuth 1992). In Mohawk and other polysynthetic languages, free word order is the result of a kind of base-generated dislocation that is syntactically very similar to the Clitic Left Dislocation found in Romance languages (Baker 1995b:ch.3). In Warlpiri and other Australian languages, free word order is probably a result of the fact that nominal secondary predication is very free (Speas 1990:165-72). Thus, there is not and probably should not be a fully unified theory of nonconfigurationality.[11] However, if this general approach is on the right track, then the UTAH does apply to these languages, just as much as it does to ergative and accusative-configurational ones, with observable empirical consequences.

3. Direct vs. Oblique Internal Arguments

Having confirmed that the choice of the subject argument is determined by something like the UTAH, let us turn to direct objects. Here we will be particularly concerned with three-argument verbs, and assume that one argument (the causer of the event) has already been chosen as the subject. The crucial question, then, is which of the other two arguments is expressed as the direct object of the verb, and whether the facts in this domain are compatible with the UTAH. The remaining argument of the verb is then typically expressed as the object of a semantically appropriate adposition or semantic Case marker.

In the matter of subject selection, there is little controversy that the causer-to-subject rule applies to most verbs in many languages; the only questions are whether this rule should be extended to all predicates and all languages. However, in the domain of object selection there is much less agreement as to what the basic rule is. Part of the reason for this lack of consensus is

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[10]However, the reader should be aware that many researchers draw a very different moral from these facts about nonconfigurational languages: they conclude that anaphor-binding, control, and incorporation must not determined by c-command and other structural properties, but rather by something else—either a functional representation (Bresnan (1982), Simpson (1991) and other work in Lexical Functional Grammar), or cognitive and pragmatic considerations. Much can be said to compare these approaches, but this is not the place to say it.

[11]See Chamorro (1992) and Baker (1995b) for some comparison of the Mohawk-type of nonconfigurationality with the Hindi/Japanese-type, and Baker (in progress) for some comparison of the Mohawk and Warlpiri types.

the fact that a substantial percentage of the three-argument verbs in English alternate as to which argument shows up as the direct object. Two particularly important and well-studied alternations are the dative alternation in (13) and the locative alternation in (14).

(13) a. I gave the candy to the children.
b. I gave the children the candy.

(14) a. I loaded the hay onto the truck.
b. I loaded the truck with the hay.

Even those three argument verbs that do not alternate give little guidance as to which linking pattern should be taken as basic. Thus, *donate* appears only in the (13a) frame, *owe* appears only in the (13b) frame, *pour* only in the (14a) frame, and *fill* only in the (14b) frame. Moreover, superficial comparison with other languages simply adds to the confusion. For example, French has only the equivalent of (13a), while Sesotho has only the equivalent of (13b).[12] Given this situation, practically every imaginable view has adherents: some claim that (13b) is derived from (13a) (Larson (1988, 1990); also Baker (1988a), and much work in classical Relational Grammar); some believe that (13a) is derived from (13b) (Dryer 1987, Kiparsky 1987, Aoun and Li 1989); many believe that both (13a) and (13b) are base generated (Oerhle 1975, Jackendoff 1990a, Speas 1990, Dowty 1991, Collins and Thráinsson 1993). Moreover, Dryer (1987) argues that different languages make different choices in this respect: in some languages the equivalent of (13a) is basic, and in others the equivalent of (13b) is basic—a parameter of variation that he explicitly compares to the issue of ergativity. Indeed, the only thing that this entire range of researchers agrees on is that whatever account one has, it should be essentially the same for both the dative alternation and the locative alternation.[13]

Before considering the data, it is useful to survey once again the logical possibilities. Two approaches to these alternations are compatible with the UTAH. The first is to say that one or the other of the linking patterns in (13) and (14) is basic, and the other is derived from it by some kind of movement. The second is to claim that the thematic roles in the (b) sentences are subtly different from those in the (a) sentences, and this justifies constructing two different syntactic structures (see Speas (1990), among others). The solution that would refute the UTAH is one which said that the (a) and (b) sentences do not differ in thematic roles but are both base-generated as a result of different subcategorization frames associated with the verbs in a partially idiosyncratic manner; this was the standard view in the late 1970s and early 1980s (see also Jackendoff (1990a)). In fact, I will argue that the dative alternation and the locative alternation are quite different in these respects, thereby disagreeing with the standard view. The dative alternation is a result of movement, with sentences like (13b) being derived from underlying structures like (13a) by a combination of P-incorporation and NP-movement. In contrast, the locative alternation results from two different conceptions of the event in question: one in which the hay is seen as primarily affected, and one in which the truck is seen as primarily affected (Rappaport and Levin 1985, Pinker 1989, Dowty 1991). Once the viewpoint is picked, the affected argument (i.e., the theme) is consistently generated as the direct object. If this is correct, then the minimal contrast between the two alternations illustrates elegantly the two options allowed by the UTAH, while giving reason to think that it is correct to rule out the intermediate option. Moreover, I will survey some evidence that suggests that the same is true in other,

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[12]Less is known about the locative alternation crosslinguistically. It seems that some languages have only the (14a) pattern (Mohawk is one such language); it is not clear that any languages have only the (14b) version.

[13]See also Pesetsky (1995). To be strictly accurate, Dowty (1991) anticipates a unified treatment for dative and locative alternations, but doesn't completely commit himself to one. Similarly, Tenny (1994:81-83) expresses a preference for a base-generation approach to the dative alternation, similar to the one she has for the locative alternation, but leaves it out of the formulation of her principles. Dryer (1987) and Collins and Thrainsson (1993) say nothing about the locative alternation.

superficially different languages, thereby supporting the idea that the basic object linking rule is universal, contra Dryer (1987).

3.1 Objects in English

Let us begin with English, considering first the semantic side of the issue. The crucial question is whether (13a) and (13b) mean the same thing or not, and similarly for (14a) and (14b). The answer to this question depends in part on how fussy one wants to be. On a crude level, the (a) and (b) sentences can often be used to describe the same events; in this sense they are synonymous. On a very detailed level, the (a) and (b) sentences differ at least with respect to matters of topic and focus, so that they do not always sound equally good in every discourse environment. However, the crucial matter with respect to the UTAH is whether the two sentences differ specifically in terms of their thematic roles, where this is a proper subpart of a complete semantic and pragmatic characterization. In fact, I believe that at this medium-grain level of description (14a) and (14b) differ, but (13a) and (13b) do not.

Take first the locative alternation. There is a clear intuition that the object argument in both versions of (14) is "totally affected": in (14a), all the hay is loaded into the truck, but the truck need not be completely loaded, whereas in (14b) the truck is completely loaded, but there may be unloaded hay left over. In both cases, then, the NP expressed as the direct object is seen as undergoing a change of state (Pinker 1989) and thus "measures" the progress of the event named by the verb (Tenny 1994). Dowty (1991:591-92) brings out this intuition by invoking the fact that verbs which are normally accomplishments aspectually often become activities when their theme argument is a bare plural or mass noun. Now, in locative alternation constructions, the argument that is expressed as the direct object determines the aspectual quality of the whole clause; whether the oblique argument is determined or not has no effect, as shown by the *in an hour/for an hour test* in (15) (see Dowty 1979).

(15) a. John sprayed this wall with paint in an hour / (#)for an hour. (OK, but atelic)
b. John sprayed paint onto this wall #in an hour / for an hour.
c. John sprayed subway cars with this can of paint #in an hour/ for an hour.
d. John sprayed this (whole) can of paint onto subway cars in an hour /#for an hour

Dowty concludes from this that *paint* is the "incremental theme" in (15b,d), while *this wall* and *subway cars* are incremental themes in (15a,c). In other words, the thematic roles associated with the participants in the event differ in the two versions of the locative alternation.

If one tries to replicate these judgments for the dative alternation, however, results are not nearly so clear. If one asks whether the candy or the children are totally affected in (13), it seems that (for this particular example anyway) both must be. Moreover, when one constructs examples parallel to those in (15) by putting bare plural NPs in the various argument slots, one gets the following pattern, according to my judgments:

(16) a. I have read stories to the children for an hour / #in an hour
b. I have read the children stories for an hour / #in an hour
c. I have read the story to children ?for an hour / in an hour
d. I have read children the story ?for an hour / in an hour

Here dative shift seems to have no effect on the judgments: whether *stories* is a bare plural or is determined decides whether the event is an activity or an accomplishment, and the status of *children* is irrelevant in both syntactic frames. Thus, by parity of reasoning, *stories* is the incremental theme in both versions of the dative alternation. Therefore we fail to find evidence that the two differ in their thematic roles.

In fact, the literature that argues for a base-generation account of the dative alternation does not claim that two members of the alternation differ in delimitedness per se. Instead,

researchers typically try to bring out the intuition that the "recipient" is affected by the action in (13b) in a somewhat different way. Essentially, the idea is that the transfer of possession involved in these kinds of verbs must succeed in the double object frame, whereas it need not in the NP-PP frame. Thus, (17b) suggests that the children actually learned some amount of French more strongly than (17a). Similarly (18b) suggests that the ball actually reached Bill, whereas (18a) does not, and (19b) is weird because the dead lover cannot perceive the song.[14]

(17) a. I taught French to the children.
b. I taught the children French.

(18) a. I threw the ball to Bill.
b. I threw Bill the ball.

(19) a. She sang a song for her dead lover.
b. #She sang her dead lover a song.

Thus, the (b) sentences suggest that the recipients undergo a kind of change of state in that they come to possess something (knowledge of French, the ball, an experience of a song). While I agree that there is something to this judgment, I think it must be stated at the level of "suggests," rather than "asserts" or "implies". Thus, the sentences in (20) may be stylistically awkward, but they do not feel to me like contradictions and I can imagine finding theme in texts.[15]

(20) a. I taught the children French, but they didn't learn it at all.
b. I threw John the ball, but it didn't reach him because of the strong wind.
c. Mary sang her lover a song, but he didn't hear it because he had just died.

It is a priori very attractive to have a unified analysis of dative shift and the locative alternation, so it is tempting press the subtle differences in (17)-(19) into service as evidence for such an analysis. However, the evidence is weak at best, and the contrast between (15) and (16) clearly points the other way.

In addition, there are many syntactic tests that confirm that the dative alternation has a different status than the locative alternation. I will briefly survey a variety of these. Their common property is that they distinguish the shifted benefactive/goal argument of a dative verb from the theme argument of a dative verb and the direct object of either version of the locative alternation. My claim then is that these tests show that the theme of a dative verb, and the objects of both versions of the locative alternation are underlying direct objects, but benefactive/goal arguments are not.[16] However, space limitations permit me to give only very brief discussions of the theoretical underpinnings of the tests.

The first test involves adjectival secondary predication. Secondary predicates obey a c-command condition, such that they must both c-command and be c-commanded by their subjects

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[14]These data and most like them can be traced back to Green (1974). However, Green herself questions the existence of dative movement only for *teach* (and *show*), saying that as far as she can tell nonidiomatic examples with *give* are essentially synonymous. See fn. 23, 32, and 38 for other peculiarities of *teach* that are probably related.

[15]Compare Gropen et. al. (1989:242), who say that a sentence like (20b) "sounds somewhat self-contradictory" and say of a sentence like (20c) that the nondative-shifted alternate "may sound a bit less anomalous." Thus, while they draw the opposite conclusion from mine, they admit that the key judgments are far from categorical. I tentatively assume that these differences, to the extent that they are real, are due to the topic-focus differences between the two versions of the dative shift, and not to differences in the semantic/thematic roles.

[16]The reader should not be confused by the fact that there are also syntactic tests that treat all four class of direct object as the same. For example, all four must be adjacent to the verb, must become the subject of a passive clause, and may cliticize to the verb (e.g. in Bantu languages). I assume that these properties are sensitive not to the base object position (the Spec of the inner VP), but rather to the derived object position (the Spec of Aspect Phrase).

(Williams 1980:n.1). As a result, depictive and resultative APs can be predicated of the direct object, but not the object of a PP, even when this would be pragmatically plausible:

(21) a. I put *the food* on the table *hot*.
b. *I put the ice-cream into *the oven hot*.

Now locative alternation verbs work just as one would expect on the basis of their superficial syntax: an AP can be predicated of the direct object but not of the object of the PP, regardless of which expresses the location and which the material (Williams 1980:204).[17]

(22) a. John loaded *the hay* onto the wagon *green*.
b. *John loaded the hay onto *the wagon full*.
c. *John loaded the wagon with *hay green*.
d. John loaded *the wagon full* with hay.

With dative verbs, however, Williams observes a further restriction: an AP cannot be predicated of the goal even when it is not expressed as the object of *to* .

(23) a. I gave *the meat* to Mary *raw*.
b. *I gave the meat to *Mary hungry*.
c. I gave Mary *the meat raw*.
d. *I gave *Mary* the meat *hungry*.

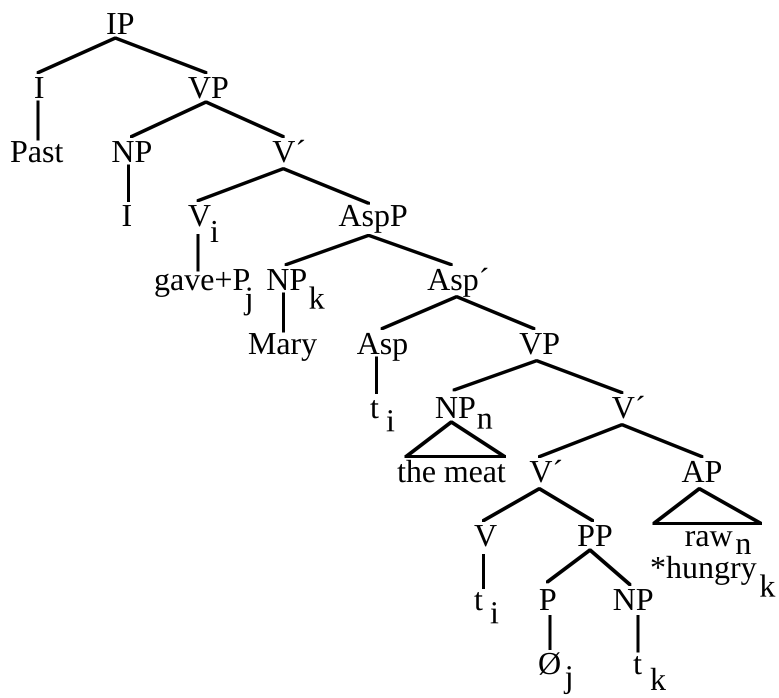
Indeed, (23d) is the only situation in which an AP cannot be predicated of a bare NP that is inside VP. Williams introduces a special stipulation to cover this case, saying that "If X is in the VP, then X is predicated of the theme of V." However, this is ad hoc; moreover, it violates the conjecture of Rappaport and Levin (1988), Belletti and Rizzi (1988), and Grimshaw (1990) that thematic roles are relevant only to the construction of initial syntactic structure and cannot be referred to directly by syntactic principles.

A more interesting generalization that can be gleaned from (23) is that the predication possibilities in the dative-shifted sentence are identical to those in the NP-PP sentence. This makes sense if the dative shifted construction is derived from the NP-PP construction. Specifically, suppose that a secondary predicate must be a dependent of (the inner) VP, as seems to be true observationally. As such, it will be in a mutual c-command relationship with a normal direct objects. Next, suppose that we derive the dative shift as in Larson (1988), with the minor difference that what Larson's calls "dative-case absorption" is treated as an instance of Preposition Incorporation in the sense of Baker (1988a). When the preposition is incorporated, it no longer can license Case on its object; therefore the goal must move to a position outside the inner VP to receive/check structural accusative Case. (For concreteness, I assume this position is the specifier of Aspect Phrase, following Travis (1991).) As a result of this movement, the goal comes to be before the theme and asymmetrically c-commands it, as shown in (24).

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[17]Williams' examples are not a perfect minimal pair in that *green* is a depictive predicate of *hay*, that describes its state throughout the event, whereas *full* is a resultative predicate that characterizes the wagon's state at the end of the event. The difference is presumably not crucial however. Thus, in *?I loaded the refrigerator with sodas warm*, *warm* is a depictive predicate of *refrigerator* and not of *sodas* (although the example is not as felicitous as one would like, and some speakers reject it).

(24)



Now NP_k does not c-command AP from its base position, and it is not c-commanded by AP in its derived position. Hence, the goal NP is never in the configuration it needs to be to be the subject of the secondary predicate. In contrast, the theme NP is generated as the specifier of VP and remains there, so it can be the subject of a secondary predicate.[18] In this way, we eliminate Williams' stipulation, and motivate a derivational approach to the dative shift. Moreover, the fact that *the wagon* in (22d) can be the subject of an AP predicate shows that it is in fact an underlying object, base-generated in Spec, VP (contra Larson (1990) and Aoun and Li (1993)).

Other differences between the dative alternation and the locative alternation appear in the domain of *wh*-movement. It is a well-known but somewhat mysterious fact that it rather bad to extract the first object of a double object construction in English and some other languages (see Stowell (1981), Baker (1988a) and references cited there).

(25) Which woman do you think I should ?give/*buy t perfume?

Naturally the theme-direct object in the NP-PP structure can be easily extracted:

(26) Which perfume do you think I should give t to/buy t for Mary?

More interestingly, it is also perfectly grammatical to extract the direct object from either version of a locative alternation:

(27) a. Which boxes do you think I should load t onto the truck?
b. Which truck do you think I should load t with hay?

The same asymmetry shows up in rightward movements, such as heavy NP shift. As is well-known, most direct objects can extrapose to the right over some other constituent when they are

[18]Thus, the fact that the theme NP can be a subject of predication even in a dative shift construction argues against Larson's original claim that the theme becomes an adjunct, as pointed out by Paul Kiparsky (personal communication). It also argues against the claim that the theme NP in a double object construction is the object of a null preposition, as proposed by Emonds (1985) and Pesetsky (1995).

long and/or focused. However, this movement is sharply impossible for the goal object of a double object construction (Stowell 1981, Kayne 1984:ch.9, Larson 1988).

(28) a. *I gave t candy every child that came to the door.
b. I gave t to Johnny every piece of candy I could find.
c. I loaded t with hay three carts and one wheelbarrow.
d. I loaded t onto the cart a stack of books that had been sent to the library.

Again, the goal NP of the double object construction has unique syntactic behavior.

It is not clear what accounts for the deviance of (25) and (28a). One possibility that is compatible with the current framework is mentioned in Kayne (1984:202, n.19). Suppose that when the goal NP moves to the derived object position in a structure like (24), it pied pipes the null preposition along with it, for some reason. Then extracting the NP from this moved PP violates the Subject Condition (also known as the Left Branch Condition, or the Condition on Extraction Domains): one is moving a proper subpart of the structural subject of a functional category. In contrast, simple object extraction takes the whole subject (which is allowed); perhaps it even originates in the VP-internal theta-position where it is lexically governed. Alternatively, Baker (1988a) simply stipulates that it is impossible to extract the complement of a null preposition.[19] Whatever the correct analysis, these facts clearly show that there is something syntactically special about the goal in a double object construction.

Further evidence comes from derived nominals. Kayne (1984:ch. 7) discusses at length the fact that while the NP-PP frame can easily appear in a nominalization, the NP-NP frame cannot. Kayne was primarily concerned with Romance-based derived nominals formed by affixes such as *-ment*, *-ion*, and *-age*, but he mentions in a footnote (p. 161-2 n. 31) that the same facts hold for native Germanic nominals derived by *-ing*, at least for some speakers. Thus, Fraser (1970:92, 98) gives as bad the following, and I agree.[20]

(29) a. *Jim’s giving of Mary (of) the book
b. *the renting of the men (of) the house
c. *his teaching of John (of) mathematics

Similar nominalizations based on the NP-PP frame of the verb are grammatical:

(30) a. Jim’s giving of a book to Mary
b. the renting of the house to the men
c. his teaching of mathematics to John

Kayne does not discuss the locative alternation directly, perhaps because the locative alternation verbs, being mostly monosyllabic verbs of Germanic origin, do not have derived nominalizations (see Pesetsky (1995:147)). However, *-ing* nominals are possible with these verbs, and I find nominalizations corresponding to either argument frame quite acceptable:[21]

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[19]Another possibility compatible with my framework is Larson’s (1988) analysis of the paradigm in (28) in terms of “light predicate raising.” Larson’s account does not generalize to *wh*-extraction, but this may be appropriate since the heavy-NP shift contrast is much sharper. Baker (1988a, 1988b) argues that the deviance of (25) and (28a) is not simply a parsing effect created by the juxtaposition of two unmarked NPs: he shows that the same effect is found in dative constructions in Chichewa even when no theme NP is present, but it is not found in superficially similar instrumental constructions that have sequences of two bare NPs.

[20]However, Kayne cites Jesperson as having examples like *the giving of words figurative meanings*. The generative tradition of concentrating on Romance-based derived nominals rather than *-ing* nominals can be traced back to Chomsky (1970), who is rather tentative about extending the lexicalist analysis to *-ing* nominals. However, this biases the matter—needlessly, I believe—against both the locative alternation and the dative alternation, which are largely properties of the Germanic vocabulary of English, as is well-known.

[21]In this I disagree with Pesetsky (1995), who finds the (32) pattern unacceptable on the basis of a handful of noncanonical locative alternation verbs that (atypically) allow Romance-style derived nominals. I believe that the

(31) a. the loading of the truck with hay
b. Mary's spraying of the wall with paint

(32) a. the loading of the hay onto the truck
b. Mary's spraying of paint onto the wall

In particular, the contrast between (31) and (29) is quite clear.

Several accounts of these nominalization facts are possible. For example, one could follow Chomsky (1986) and relate them to more general facts about Case assignment in nominalizations. Chomsky points out that *of*-insertion cannot apply to Case-mark the embedded subject in the nominalization of an Exceptional Case Marking verb:

(33) a. I believe [John to be the winner] (Chomsky 1986:189)
b. *the belief of John to be the winner (Chomsky 1986:191)

Chomsky concludes from this that the preposition *of* is really a realization of genitive Case assigned by the noun. Moreover, genitive Case is a type of inherent Case, which (unlike accusative Case) can only be assigned by a head to an NP if the head θ-marks the NP. Since *belief* does not assign a θ–role to John in (33b), the genitive Case expressed by *of* is impossible in this situation. This theory can be extended to explain why the examples in (29) are bad. As before, we assume that the goal is θ-marked by a (null) preposition even in the dative shifted construction. As such, it is not θ–marked by the derived noun; therefore, it cannot receive genitive Case from that noun. Neither can it get Case from the null preposition, so the structure is ungrammatical. In the locative alternation, however, each bare NP is a theme argument, directly θ-marked by the head; therefore either one can appear as an *of*-phrase in a nominal.

A fourth difference between the dative alternation and the locative alternation is found in synthetic compounds. In compounds headed by a locative alternation verb, either the material or the location can appear as the nonhead, as long as other factors are controlled for:[22]

(34) a. hay-loading, glassware-packing
b. truck-loading, box-packing

However, the goal argument of a dative shift verb can never be in a synthetic compound:

(35) a. secret-telling, book-reading
b. *spy-telling, *child-reading

This asymmetry can be explained in terms of the observation that there is no room for a preposition in a simple synthetic compound. Thus, it follows that if a given nominal is θ-marked by a preposition, it will not be able to appear in a compound either. This can be seen apart from dative shift in the ungrammaticality of examples like **Relative-depending is unwise* (compare *Depending on relatives is unwise*). The (35b) examples are ruled out for the same reason, given that goals always receive their θ-role from a (possibly null) preposition. In contrast, (34) shows once again that either argument of a locative verb can be directly θ-marked by the verb.[23]

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verbs Pesetsky uses actually participate in a somewhat different alternation.

[22]In particular, one must take verbs where both the material and location argument is optional; otherwise the examples are ruled out by Selkirk's (1982) First Order Projection Condition.

[23]A similar effect can be seen in adjectival passives: either the material argument or the location argument may be the subject of the adjectival passive of a verb like *load* (*the recently loaded truck, the recently loaded hay*; Levin and Rappaport (1986:634)); however, the goal cannot be the subject of the adjectival passive of a dative verb (*the untold story*, **the untold person*; Wasow (1977:344)). Levin and Rappaport (1986) suggest that the ungrammaticality of examples like this last one is due to the fact that there is no place for the preposition needed to assign the goal role.

Further evidence that locative alternations are syntactically different from dative alternations comes from quantifier scope interactions. In an NP-PP frame either the theme or the goal can take wide scope if both are quantified expressions. However, in the double object frame, the first NP must have wide scope with respect to the second. Thus, (36a) is ambiguous but (36b) is not; it can only mean that there is a single student who must do all the work (Aoun and Li 1989, 1993, Larson 1990, Hornstein 1995).

(36) a. The teacher assigned one problem to every student. (Larson 1990:604)
b. The teacher assigned one student every problem.

However, no such scope-freezing effect is found in the locative alternation. Both versions of the locative alternation are scopally ambiguous; in particular, a wide scope reading of the oblique argument in (37b) is possible, at least for some English speakers.[24]

(37) a. I loaded one crate of books onto every library cart.
b. I loaded one library cart with every crate of books.

Again, the dative double object construction stands out as being syntactically unique.

Unfortunately, there is no satisfactory analysis available for the scope-freezing effect in double object constructions.[25] One possibility worth exploring would be to relate it to the fact that the first object in a double object construction cannot be *wh*-moved or heavy NP-shifted. Perhaps this object also cannot undergo the LF movement rule of Quantifier Raising, for the same reason. This would partly explaining why the scope possibilities are more limited. However, there are many problems to be overcome, and at best this will reduce the scope-freezing effect to another ill-understood phenomenon. Nevertheless, we can be optimistic that, whatever the final analysis is, it will support idea that only the dative double object construction has an underlying structure that does not match its surface configuration.

A final difference between the dative alternation and the locative alternation involves how they interact with the phenomenon of unaccusativity. Many verbs in English can be used either transitively or intransitively according to the pattern in (38).

(38) a. They dropped a rope (down).
b. The rope dropped (down).

A few of these verbs also take part in the dative shift alternation when they are transitive:

(39) a. They dropped the rope (down) to John.
b. They dropped John (down) the rope.

When the agent argument is omitted from the NP-PP argument structure, the theme-object can assume the subject position to derive an acceptable sentence:

(40) The rope dropped (down) to John.

On the exceptional behavior of verbs like *teach*, see Wasow (1977) and fn. 38 below.

[24]Note that because of the "total affectedness" effect, the object of *with* in (37b) must refer to enough stuff to completely load a cart. I believe that failure to attend to this factor has caused some confusion in the literature; thus, Larson (1990) and Aoun and Li (1993) (citing unpublished work by Schneider-Zioga) give flawed examples and wrongly conclude that the scope-freezing effect is found in locative alternations also. Nevertheless, a few speakers have reported to me that they still find the wide-scope interpretation of *every crate* difficult in (37b).

[25]See Aoun and Li (1989, 1993) and Hornstein (1995) for interesting proposals. However, these proposals have conceptual flaws, do not generalize to the full range of cases, and crucially assume syntactic structures for the double object construction that are different from the Larsonian one that I am arguing for.

However, Baker (1992c, 1995a) points out that when the agent is omitted from the NP-NP frame, no grammatical sentence can result. In particular, the goal-object cannot move to the subject position to license its Case and satisfy the Extended Projection Principle (this particular example is from Wasow (1977:332); see also Evereart (1990)):

(41) *John dropped t (down) the rope.

This sentences is only acceptable on the irrelevant reading in which the subject is understood as the agent of the verb; it cannot be understood as a moved goal or benefactive. More generally, there seem to be no nonagentive change-of-possession verbs that undergo the alternation in (42); thus, Levin (1993:47) observes that "The dative alternation does not have an intransitive counterpart."[26]

(42) a. THING GO to PERSON.
b. PERSON GO THING.

However, there are many unaccusative locative alternation verbs, such as *swarm*::

(43) a. The bees swarmed in the garden
b. The garden swarmed with bees

(See Levin (1993:53-55) for an extensive list and brief discussion.) These examples are parallel to those with *load*, except there is no agent, and as a result the totally affected theme shows up in the subject position. Thus, the theme of a dative verb and either argument of a locative verb can become the subject of an unaccusative structure, but the goal of a dative verb cannot.

Baker (1992c, 1995a) claims that this pattern of facts can be explained if one assumes with Larson (1988) that the goal always starts lower than the theme in verbs of change of location or possession. When an agent is present and dative shift occurs, the goal becomes higher than the theme by moving out of the lower VP into the derived object position (Spec, AspP), as shown in (24). However, when there is no agent, the inner VP contains all the arguments of the verb, and hence counts as a Complete Functional Complex in the sense of Chomsky's (1986). Movement of the goal over the theme and out of such a VP thus violates condition A of Chomsky's Binding theory: the trace of the movement fails to be bound within the smallest Complete Functional Complex that contains a subject distinct from that trace. However, no such problem arises in locative alternation examples, because the location is higher than the material not as a result of movement, but rather as a result of being viewed as the theme of the event. When this happens, the location argument projects directly into the specifier of VP position, and there is no intervening NP to prevent it from moving to the subject position.

Let us summarize what we have learned about complement alternations in English. Lexical semantic judgments indicate that the two members of a locative alternation differ more than the two members of a dative alternation. In particular, which participant counts as totally affected and delimits the action changes in locative alternations, but not in dative alternations. Given this, it is reasonable to say that the locative alternation results from different choices as to what is considered the theme of the event, but this is less plausible for the dative alternation. Next, when we turn to syntactic behavior, it turns out that the goal object of a double object construction has many peculiar properties that distinguish it from other superficial objects, including location objects. Most of these are restrictions: the goal object cannot be the subject of a secondary predicate, cannot undergo *wh*-movement or heavy NP shift, cannot be assigned genitive in a derived nominal, cannot be the nonhead of a synthetic compound, must take wide-scope with respect to the second NP, and cannot become the subject of an unaccusative verb.

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[26]Pesetsky (1995:124-25) claims that the verb *get* shows this alternation, since one can say both *The book got to Sue* and *Sue got the book*. See Baker (1995a:30 n.3) for a reply, claiming that these two sentences are actually derived from two different senses of the highly polysemous verb *get*.

These restrictions can, to a substantial extent, be understood if one says that the goal NP originates within a PP even in double object constructions; it then moves past the direct object to a distinct "derived object" position. If all this is correct, then there is an important correlation between lexical semantics and syntax: where there are few semantic differences, there are syntactic oddities pointing to a nontrivial derivation (the dative alternation); where there are significant semantic differences, there is no sign of such a derivation (the locative alternation). This pattern of facts supports the UTAH. Furthermore, we make the strong prediction that all other complement alternations in English should fall into one of these two classes. This remains to be tested in full, but seems consistent with what is known so far.[27]

This section has also given evidence that helps us to refine the statement of the UTAH. In particular, there is good evidence that the double object construction is derived from an underlying structure that is isomorphic to that of the NP-to-NP frame, rather than vice versa. If this is correct, then we can conclude that for English three-place verbs with a theme and a goal, the theme is consistently expressed as an NP in the Specifier of VP, while the goal is inside a PP that is the complement of V.

3.2 Do Languages Vary in the Projection of Objects?

The next question, then, is whether this projection rule is universal, or whether it varies parametrically. Prima face evidence that it might vary comes from the fact that many languages have only the double object construction. Mohawk (Iroquoian) and Sesotho (Bantu) are two languages of this kind:

(44) a. O'neróhkwa' y-a-hiy-atʌnyéht-ʌ-' ne Shawátis.
box trans-fact-1sS/MsO-send-ben-punc NE John
'I sent John a box.'

b. *O'nerohkwa' y-a-k-atʌ´nyeht-e' Shawatís-hne.
box trans-fact-1sS/NsO-food-send-punc Shawatis-loc
'I sent a box to John.'

(45) a. Ntate o-f-a bana lijo. (Machobane 1989:113)
father SP-give-fv children food
'My father gives some food to the children.'

b. *Ntate o-f-a lijo ho bana.
father SP-give-fv food to children
'My father gives some food to the children.'

In such languages, one could still say that the (a) examples are derived from a source similar to the (b) examples, but only at the cost of saying that "dative shift" (however expressed) is

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[27]See section 4.2.2 for a brief discussion of the so-called conative alternation. Verbs of fulfilling such as *present* undergo the alternation in (i), which has superficial similarities to both dative shift and the locative alternation.

(i) a. Napoleon presented the medal to the soldier.
b. Napoleon presented the soldier with the medal.

Preliminary evidence suggests that this is essentially a variant of the double object construction in which inherent Case on the object is spelled out as *with* rather than as a null Case. Thus, clauses like (ib) cannot be nominalized (Kayne 1984:153, 156), show the scope freezing effect (Larson 1990:605), and do not have unaccusative versions (Levin 1993:66)—all properties that are reminiscent of the double object construction. Other than this, it seems like a good bet that all other diatheses in English are the result of differing thematic analyses of the event, like the locative alternation. See Pinker (1989), Dowty (1991), Levin (1993), and Tenny (1994) for discussion of some relevant cases.

obligatory. This looks like an unwarranted degree of abstractness, making it desirable to consider alternatives in which the (a) examples are generated directly. In fact, Dryer (1987) develops a set of arguments along these lines within a modified Relational Grammar framework. He draws an explicit parallel between the apparent crosslinguistic variability of object choice in sentences like these and the variability in subject choice that results in ergative languages. Languages in which the goal of a ditransitive verb and the theme of a monotransitive verb seem to map into a single grammatical function Dryer calls "primary object languages"; they contrast with "direct object languages" in which themes are consistently the underlying object whether or not a goal is present.

The natural translation of Dryer's ideas into the current P&P framework is to assume that in primary object languages the goal projects directly into the specifier of VP and the theme projects as the complement of V if and only if there is a goal.[28] Indeed, Larson (1988:351, n.18) seems open to the possibility that there may be such languages, citing Johns (1984) work on Inuktitut as a possible case in point. However, I will argue that there are in fact no "deep primary object languages" in this sense. Rather, a close look shows that the same projection rule that works in English is at work in both primary object languages and direct object languages. My strategy for building this argument is simply to show that the "goal objects" of triadic verbs in Mohawk and Sesotho show the same peculiarities of behavior that goal objects do in English. Such facts then provide evidence that the basic principles of constructing the underlying syntactic representation are also the same across the three languages.

3.2.1 Primary Object Languages.

Consider first the semantic issue of delimitedness. Which NP of a triadic verb counts as the measurer of the event referred to by the verb in Mohawk and Sesotho: the theme as in English, or the goal? If it were the latter, this would be evidence that what corresponds to the goal in English actually has theme/direct object properties of a certain kind. However, in Mohawk there is clear evidence that points the other way. The standard *in an hour/for an hour* test does not work well in this language (cf. Baker (1995b:290)), but Mohawk has an adverbial particle *eso* 'many' that may modify the event argument of the VP it attaches to. If the modified verb has an "incremental theme" that measures out the event, many events will correspond to many tokens of the kind referred to by that theme argument. Thus, one can recognize the theme of the verb in Mohawk by attaching *eso* to the VP and seeing which NP (if any) is understood as there being many of. These dynamics can be seen with the simple transitive verb in (46).

(46) Eso wa-ha-tshʌri-' ne onhúhsa'.
a.lot fact-MsS-find-punc NE egg
'He found a lot of eggs.'

Literally, this means that there were many events of him finding an egg; thus the Mohawk user easily infers that there were many eggs found, since egg-finding events are naturally individuated by the eggs found. However, even if the subject agreement prefix were changed to plural, this sentence would not be interpreted as 'a lot of people found the egg,' since VPs are delimited by their themes, not their agents (Tenny 1994). Now consider the use of *eso* with a dative verb:

(47) Eso wa'-khe-tsikét-a-nut-e' ne rati-ksa'-okú'a.

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[28]Dryer himself would probably not approve of this implementation of his idea. Toward the end of his article he points out that many languages are not uniform in how they distribute "object properties" over the two objects of a ditransitive verb: some processes pick out "primary objects" and some "direct objects", even in the same language. In this he draws a parallel to the phenomenon of split ergativity, which is also more common than "pure" or "deep" ergativity. Therefore, he claims that the grammatical functions Primary Object and Secondary Object do not replace Indirect Object and Direct Object, but rather coexist with them and supplement them. (The simpler idea that the Primary Object is the "real" Direct Object in some languages he attributes to Comrie (1982), among others.)

a.lot fact-1sS/3pO-candy-feed-punc NE MpS-child-pl
'I gave a lot of candy to the children.' NOT: 'I gave candy to a lot of children.'

Here *eso* clearly implies that much candy was given, not that many children were given candy. Thus, 'candy' is the incremental theme, even when a goal NP is present, and in spite of the fact that the goal is the "primary object" for purposes of things like agreement. See Aissen (1987) for similar facts in Tzotzil (Mayan), another language with "obligatory dative shift".

I do not have direct evidence of themehood and delimitedness in Sesotho. However, Machobane (personal communication) reports that the semantic restrictions alleged to hold of the English double object construction (see examples (17)-(19)) are undetectable in their Sesotho translations. Thus, there is no evidence of this kind for a difference in θ-roles.

Next, let us turn to the morphosyntactic properties of goal-objects in Mohawk and Sesotho. The first type of evidence comes from compounding and noun incorporation. In Mohawk, the sole object of many monotransitive verbs can incorporate into the verb to form a kind of compound verb (Postal 1979, Baker 1988a, Baker 1995b). One can then ask which object of a dative ditransitive verb is incorporable. The answer is clearly that the theme-object can be incorporated, but the goal object cannot, as illustrated in (48).

(48) a. Se-'wáhr-a-nut ne érhar.
2sS/MsO-meat-Ø-feed NE dog
'Feed the (male) dog some meat!'

b. *O-'wáhr-u se-náhskw-a-nut.
NsO-meat-nsf 2sS/(ZsO)-pet-Ø-feed
'Feed the pet some meat!'

Note that even in (48a) the goal object that triggers object agreement, showing it to be the "primary object" in Dryer's sense. Thus, noun incorporation is sensitive to the direct-indirect object distinction, even though Mohawk seems to be a primary object language in several other respects. Exactly the same pattern of facts is found in Southern Tiwa, Nahuatl, Mayali, Chukchee, and indeed all languages that are known to have syntactic noun incorporation. Baker (1988a, 1995b) analyzes these facts as showing that the goal NP is the complement of a null P, as in English. This P prevents the goal from incorporating into the verb by the Head Movement Constraint. However, these patterns also show a clear similarity to those involving synthetic compounds in English (see (35)).[29]

Bantu languages do not have true noun incorporation, but some have a kind synthetic compounding. I have no information about this in Sesotho, but Sproat (1985) discusses compounds in the related language Chichewa. A simple example is (49), where the theme of a monotransitive verb is the nonhead in the compound.

(49) m-pala-matabwa (Sproat 1985:225)
Cl-scrape-wood
'wood-scraper' (i.e. 'carpenter')

However, goal objects cannot exist in such a compound:

(50) *m-patsa-ana ma-siwiti (Sproat 1985:228)
Cl-hand-child cl-sweets
'a child-hander of sweets'

[29]Further, we would expect that if these languages have locative alternations, the material argument could incorporate when the location argument is expressed as a locative oblique, and the location argument could incorporate when the material argument is expressed as an instrumental oblique. Mohawk apparently does not have locative alternation verbs, but the prediction seems to be correct for Chukchee (Nedjalkov 1976:206-9).

This can be interpreted as evidence that the goal is not a direct object argument of the verb in Chichewa any more than it is in English or Mohawk.[30]

Another peculiarity that goal objects in Chichewa share with their English counterparts is the deviance of extracting goal objects by *wh*-movement (Baker 1988a). In a simple transitive clause, the sole object of the verb can be fronted by clefting. When a recipient-benefactive is added to the structure (along with an applied affix), it becomes the primary object of the verb in the sense that it is adjacent to the verb, it may be replaced by a clitic pronoun, and it becomes the subject if the verb is passivized. However, the goal object cannot naturally be clefted:

(51) a. Uwu ndi-wo mtsuko u-mene ndi-ku-ganiza kuti Mavuto
this be-agr waterpot cl-which 1sS-pres-think that Mavuto
a-na-umb-ir-a mfumu.
SP-past-mold-appl-fv chief
'This is the waterpot which I think that Mavuto molded the chief.'

b. *Iyi ndi-yo mfumu i-mene ndi-ku-ganiza kuti Mavuto
this be-agr chief cl-which 1sS-pres-think that Mavuto
a-na-umb-ir-a mtsuko.
SP-past-mold-appl-fv waterpot
'This is the chief which I think that Mavuto molded a waterpot.'

This pattern of facts in Chichewa is virtually identical to the pattern in English, even though "dative shift" is optional only in the latter. Again, this suggests that *mfumu* 'chief' in (51) is a derived object, but not a base-generated one. The only way one can extract the goal in Chichewa is by including an object clitic that acts as a kind of resumptive pronoun for the benefactive argument. (Similar object clitics always appear in Sesotho and Mohawk, so the restriction on extracting the goal object is not detectable in those languages.)

The last and perhaps the most illuminating comparison between the primary object languages and English is in the domain of unaccusative verbs. Recall that a goal phrase cannot become the surface subject of an unaccusative verb in English, as shown in (41). This was accounted for by assuming that the goal is always generated lower than the theme in English. In transitives, the goal can move past the theme into a VP-external position, but this is impossible with unaccusatives because when there is no agent role to assign the VP becomes a Complete Functional Complex that contains a subject (the theme) distinct from the benefactive/goal. Baker (1992c, 1995a) also points out that passive clauses pattern more or less like transitive clauses, rather than like unaccusatives, as shown by the relative acceptability of (52).

(52) (?)John was dropped t a rope.

This is expected if the passive clause actually contains a syntactically represented but covert agent argument (Baker, Johnson, and Roberts 1989). Now if goal NPs were generated higher than themes in primary object languages, the minimal contrast between (41) and (52) should disappear. This prediction is not borne out. Thus, in Sesotho the benefactive/goal can perfectly well become the subject of a passive:

(53) 'Me o-pheh-ets-o-e (t) nama
mother 3sS-cook-appl-pass meat
My mother has been cooked the meat.

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[30](50) may also be ruled out by Selkirk's (1982) First Order Projection Condition. This problem would be solved if an N representing the theme were also included in the compound, but Sproat shows that this too is impossible, perhaps because of Case theory. The ideal example to make my point would be a verb like *patsa*, where the theme argument is optional; however, it is likely that there is no such verb in Chichewa.

However, the benefactive cannot become the subject of an unaccusative verb.

(54) *Nkhono li-hol-el-a (t) lintja.
grandma agr-grow-appl dogs
'The dogs are growing for my grandma.'

Benefactives can appear with unaccusative verbs in Sesotho, but only if the theme argument of the verb is its surface subject and, in addition, the benefactive is expressed by a pronominal clitic. (This is to avoid the problem that unaccusative verbs cannot assign structural Case.) Similarly, a benefactive argument can be added rather freely to most transitive verbs in Mohawk, as in (55) (the benefactive is pro-dropped thanks to the presence of object agreement).

(55) Wa'-ha-ake-nohare-'s-e' ne atya'tawi.
fact-MsS-1sO-wash-ben-punc NE shirt
'He washed the shirt for me; he washed me the shirt.'

Benefactive arguments can also be added to unaccusative verbs, but with some restrictions. In particular, the benefactive must trigger object agreement, rather than subject agreement, showing that it has remained inside VP and is still c-commanded by the theme argument. (56) illustrates this for the verb *ate-nohare* 'come clean', an unaccusative verb derived from *nohare* 'wash'.

(56) Wa'-wak (*k)-ate-nohare-'s-e' ne atya'tawi.
fact-1sO (*1sS)-srfl-wash-ben-punc NE shirt
'The shirt came clean for/on me.' (Note: wa'-wak --> uk by a phonology)

Mohawk does not have a passive construction to compare this with, but it does have a reflexive "voice" that has the same general structure (see Baker (1995b:sec. 5.1)). Significantly, in the reflexive form of *nohare*, the benefactive argument may (and must) trigger subject agreement, not object agreement.

(57) Wa'-k (*wak)-atate-nohare-'s-e' ne atya'tawi.
fact-1sS (1sO)-refl-wash-ben-punc NE shirt
'I washed the shirt for myself.' (lit. 'I was self-washed t the shirt.')

Thus, benefactive arguments can escape the VP only if an agent is present in Mohawk, although this is seen by agreement patterns rather than by visible NP movement given the nonconfigurational nature of the language. These Sesotho and Mohawk facts are readily explicable if the theme is projected higher than the goal, but not if it is the other way around. Moreover, the same pattern seems to hold in other Bantu languages, as well as in polysynthetic languages, such as Mayali and Nahuatl.

In conclusion, we have found no evidence to suggest that the projection rules for themes and goals are any different in Mohawk, Sesotho, or similar "primary object languages" than they are in English. On the contrary, the syntactic patterns are remarkably consistent across this range of languages. Therefore, the analyses of the peculiarities of dative objects in terms of a process of dative shift should generalize to these languages as well.

3.3.2 A Note on Direct Object Languages

There is, however, another way to interpret the similarities between English, Mohawk, and the Bantu languages: one could say that English too is a primary object language. In fact, Dryer (1987) himself argues for this view, claiming that sentences like (13b) are basic, sentences like (13a) being derived from them by an "antidative" rule. If this is correct, then there might still be important differences in how languages project their arguments, but those differences will not

show up by comparing English with Mohawk or Sesotho. Instead, we need to compare these languages to true "direct object languages", which have no dative shift at all.

In fact, it is not so clear that there are any such languages. Many languages do not show any Case-frame alternation with triadic verbs, the goal argument invariably showing up in dative Case or its equivalent. Japanese is a well-studied language of this type. However, even though there is no Case marking alternation, there is a word order alternation in Japanese: the theme object can appear before or after the goal argument, as shown in (58).

(58) a. John-ga Mary-ni/*o hon-o age-ta.
John-nom Mary-dat/acc book-acc give-past
'John gave a book to Mary.'

b. John-ga hon-o Mary-ni age-ta.
John-nom book-acc Mary-dat give-past
'John gave Mary a book.'

This word order variation is normally attributed to an optional process of scrambling, which is pervasive in Japanese. However, recent literature has shown that this particular instance of scrambling has peculiar properties that make it more like A-movement than other kinds of scrambling. In particular, the goal asymmetrically c-commands the theme in (58a), while the theme asymmetrically c-commands the goal in (58b) for purposes of anaphora and bound pronouns (Saito (1992); see also Mahajan (1990) for Hindi). This reversal of prominence is exactly comparable to what one finds in the English dative alternation (Barss and Lasnik 1986, Larson 1988); thus, it is reasonable to think of the alternation in (58) as a kind of dative shift.

In fact, there is a good deal of evidence that these Japanese sentences have very much the same properties as their English counterparts. For example, Japanese allows a certain kind of floated quantifier that must be in a mutual c-command relationship with its subject (Miyagawa 1989), like secondary predicates in English. It turns out that (for most speakers) such quantifiers can be predicated of the theme-object but not of the goal in both sentences in (58) (compare English (23) and Mohawk (47)). Second, Japanese allows certain kinds of synthetic compounds, particularly if the head is a Sino-Japanese morpheme. Theme arguments can appear in such compounds, but goal arguments cannot ((?)*shoohin-jyuyo* 'prize-giving' vs. **seeto-jyuyo* 'student-giving'; *shorui-soofu* 'document-sending' vs. **yakunin-soofu* 'official-sending'; compare (35) in English, (50) in Chichewa, (48) in Mohawk). Third, if the theme and goal arguments are both quantified expressions, their relative scope is ambiguous when the word order is as in (58b), but the goal necessarily takes wide scope over the theme when the word order is as in (58a) (Hoji 1985). Hoji interprets this as evidence that (58b) is derived from (58a) by scrambling (see also Aoun and Li (1993:ch.7) and others); however, it is striking that the pattern of facts exactly replicates the scope freezing effect found in double object constructions in English (see (36)). Finally, Baker (1992c, 1995a) shows that the goal argument of a dative verb can become the subject when the verb is passivized in Japanese, but not when an unaccusative version of the verb is used; this is parallel to (41) in English, (54) in Sesotho, and (56) in Mohawk. In all these ways, then, the Japanese alternation in (58) behaves just like a dative alternation, with (58a) comparable to the double object construction. These facts raise many intriguing questions about the nature of dative Case and about what triggers dative shift.[31] However, they give no evidence against the UTAH's claim that the rules associating thematic roles to syntactic positions are invariant across languages. There is much to be done to show that other languages that appear to lack dative shift are actually like Japanese in these respects, but the evidence available so far from languages like Hindi and German appears to confirm this (see also Collins and Thrainson (1993) on Icelandic).

[31]For example, they suggest that dative Case has at least two syntactic sources: it is assigned by a null preposition *to* to its complement (Emonds 1985), or it is a variant of accusative, checked in the specifier of Aspect Phrase. They may also point to instances of NP-movement that are not Case-driven.

4. On the Formulation of the UTAH

So far we have surveyed reasons for believing that arguments bearing similar thematic roles are expressed in similar initial structural positions both within and across languages. Although there are significant differences between accusative, ergative, and non-configurational languages, and between primary-object and direct-object languages, these differences do not involve the basic projection of NPs but rather their surface licensing. The alternations in the realization of arguments of a predicate that one does find are either the result of different conceptualizations of the event, or the result of syntactic movement processes.

Agreeing then that some version of the UTAH should be accepted, the next question is which one? How can one refine this vague hypothesis into a specific principle and defend its details? In this section, I discuss three areas of controversy that have arisen with respect to these questions: (i) What thematic roles is the UTAH sensitive to and how are they ordered? (ii) Does the UTAH stipulate the exact positions of each argument, or does it only put conditions on their position relative to one other? (3) Are thematic roles or aspectual notions the primary determinants of basic syntactic structure? Once these questions are answered, we will have a rather precise picture of what the operative principle(s) actually are.

4.1 Details of the Thematic Hierarchy

Recent work on the UTAH and related topics often states the relevant principle in terms of a thematic hierarchy. For example, Larson (1988:382) proposes the following:

(59) Thematic Hierarchy
Agent > Theme > Goal > Obliques (manner, location, time, ...)
If a verb α determines θ-roles θ_1, θ_2, ..., θ_n, then the lowest role on the Thematic Hierarchy is assigned to the lowest argument in constituent structure, the next lowest role to the next lowest argument, and so on.

Speas (1990) adopts this principle directly, and Grimshaw's (1990) view is similar. Other theoretical frameworks that do not subscribe to the UTAH often capture the same effects by stating grammatical conditions not over phrase structure configurations (like c-command) determined by the Thematic Hierarchy, but directly in terms of the Thematic Hierarchy itself. Either way, it is clearly an important matter to establish what the exact hierarchy is. However, this has proved to be difficult—a problem that has created some skepticism about whether the approach as a whole is on the right track.

Consider first the question of exactly how the thematic roles are ranked. We have implicitly said much about this already. Once the issue of deep ergative languages has been dealt with, it is uncontroversial that the agent is ranked higher than all other roles. More controversial is the relative ranking of theme and goal. I have assumed and in some cases argued that the theme is higher than the goal, but many researchers in this area assume the opposite (Jackendoff 1972, Grimshaw 1990, Li 1990, Bresnan and Moshi 1990, Foley and Van Valin 1984). One source of the controversy comes from the existence of the dative alternation, and the difficulty of determining which version is basic and which (if either) is derived. This has already been dealt with at length. In particular, I consider the fact that goals cannot be subjects of unaccusative verbs to be strong evidence that they are lower than themes, given the long historical relationship between thematic hierarchies and subject choice, traceable back to Fillmore (1968).

What then are the arguments that goals should be ranked higher than themes? Some of them are embedded in frameworks of assumptions that are too different from the current one to

permit easy comparison here. However, Grimshaw (1990), working in roughly the same framework, discusses two: light verb constructions in Japanese, and compounding in English.[32] The English data has already been touched on. Grimshaw points out the contrast in (60).

(60) a. (?)gift-giving to children
b. *child-giving of gifts

She says that (60b) is bad because the goal is assigned in a smaller domain (the compound word) than the theme, which is assigned in N´. This order of assignment contradicts to her version of the thematic hierarchy. In contrast, I attributed the ungrammaticality of examples like (60b) to the fact that the goal role is necessarily assigned by a preposition, and Ps cannot appear in compounds. Evidence that this second interpretation is the correct one comes from compounds formed from verbs that have an optional theme argument. According to Grimshaw's account, it should be possible for the goal to appear as the nonhead in these circumstances, as long as the theme role is not assigned. In fact, goal-verb compounds are still completely impossible, as shown by examples like **child-reading* or **spy-telling*. Thus, English compounds do not support a hierarchy with goals higher than themes.

The facts from Japanese Light Verb Constructions are not as well understood. The basic form of Grimshaw's argument is this: Japanese has constructions that consist of an argument-taking noun and a dummy verb. The arguments of the noun can in general be expressed in two ways: either as genitive phrases inside the NP, or as constituents governed by the dummy verb. However, there is a constraint: the theme can only appear outside the NP if the goal does as well. Grimshaw again interprets this as evidence that theme is lower than goal on a thematic hierarchy, together with a principle like (59). However, other constructions work in exactly the opposite way. For example, Baker (1989) uses similar reasoning in his study of the Serial Verb Constructions found in West African languages. In these language, a phrase headed by a triadic verb such as 'give' can appear embedded within a projection of some other verb. When this happens, the theme argument of the three-place verb may appear as the object of the higher verb, but the goal object must always appear in the first projection of the dative verb. (61) is a minimal contrast from the Nigerian language Edo that shows this.

(61) a. òzó [$_{V_X}$ rhié íghó [$_{V_X}$ hàé úyì]]. (Stewart, personal communication)
Ozo take money pay Uyi
'Ozo took money and paid it to Uyi.'

b. *òzó [$_{V_X}$ guàl<u>ó</u> úyì [$_{V_X}$ hàé (íghó)]].
Ozo find Uyi pay money
'Ozo found Uyi and paid him the money.'

Thus, Grimshaw's reasoning does not extend smoothly to all comparable cases. I claim that (61) shows the true hierarchical relationship between the goal and the theme, and that a different kind of account is needed for the light verb facts (see Baker (1995b:353-56) for a preliminary sketch of an alternative account).

One attractive dividend of the view that goals are ranked lower than themes is that they can then be collapsed with other locative expressions, such as the PP arguments of verbs of putting. The theme clearly c-commands the locative arguments of such verbs, and there is no dative shift to cloud the matter. Now if goals ranked higher than themes, and themes ranked higher than

[32]In a footnote, she also mentions Li's (1990) important study of V-V compounding in Chinese. In fact, I believe that Li's paper contains only one example that might show the goal to be higher than the theme: the compound *jiao-dong* 'teach-understand', which means 'x taught z to y so that y understood z.' Since the y argument of 'understand' is higher than the z argument, the same must be true of the y and z arguments of 'teach', according to Li's principles. However, it is not clear that *teach* is really (always) an agent-theme-goal verb (see fn. 14, 38). Li gives no similar examples with more canonical dative verbs like *give*, *send*, *ask*, or *bring*.

locations, as proposed by Kiparsky (1987), Bresnan and Kanerva (1989), and other LFG work, then the two roles clearly cannot be collapsed into a single macrorole. However, there is often a rather smooth continuum between locative phrases and goal phrases. Given that the PPs in (62b,c,d) are locational paths on anyone's theory, it seems artificial to say that the PP in (62a) is not a locational path as well.

(62) a. John threw the ball to Bill
b. John threw the ball (all the way) to the fence.
c. John threw the ball toward the fence.
d. John threw the ball into the dugout.

Of course, (62a) differs from (62b,c) in that it may (or even must) undergo dative shift in some languages; this is part of the motivation for distinguishing them. My claim, however, is that this is not a *thematic* distinction; rather it is due to other factors, such as the semantic redundancy of the preposition in (62) (Larson 1988, Baker 1992a), and perhaps the fact that animate nouns must bear structural Case in many languages. In this way, one can avoid proliferating thematic roles that are difficult to distinguish from one another in practice.

This leads naturally into the other controversial question of how many thematic roles there are. Current theories range from a high of something like 10-15 down to a low of two (Dowty's Proto-agent vs. Proto-theme distinction; Talmy's (1985) Figure vs. Ground distinction). So far, we have found more reason to collapse roles more than to distinguish them. I have implicitly treated goals and recipient-benefactives as the same through out; now we have seen that these can be collapsed with location arguments as well. Presumably most source arguments such as *from John* in *I stole a book from John*' also fit into this class; together they constitute a broad category of path/location (Jackendoff 1983).[33] Similarly, in section 2.1 I briefly argued that the role experiencer, often used in the analysis of psych verbs, only confuses the theory of linking. Rather the "experiencers" of verbs like *fear* are (relatively) ordinary agent/causers, who create mental representations of a certain kind, while the "experiencers" of verbs like *frighten* are patient/themes that undergo a change of (mental) state. Perhaps some "experiencers" are goals as well (see below). However, these do not seem to form a coherent class. Thus, the core cases of thematic roles reduce down to only three: agent/causer, patient/theme, and path/location.

Of course, other thematic roles that have been proposed, such as instrument and comitative. However, these are virtually never subcategorized arguments of a verb, and their linguistic expression is highly variable across languages. Indeed, some languages have no direct expressions of them at all (Mohawk, for example). This suggests that they are not primitive thematic roles, but rather constructs defined in terms of the more basic roles. Thus, a comitative is usually either a second agent or a second theme (cf. Baker (1992b)). Similarly, Jackendoff (1987) shows that instruments are intermediate agent-themes: they are things which the agent acts upon, which then in turn act upon the ultimate theme. Clearly, there is more to say about how these and other secondary roles are worked into the syntax of different languages, but they should not be part of the basic statement of the UTAH. If this is correct, then Theta theory is rather coarse grained. It reduces to two key oppositions: agent vs. patient/theme, with the agent external, and patient/theme vs. path/location, with the theme external.

4.2 Relative UTAHs and Absolute UTAHs

The second area of debate related to the UTAH concerns how rigid the requirements it puts on a syntactic structure are. Baker's (1988a) original statement implied that particular thematic roles

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[33]However, Zushi (1992) gives interesting evidence that some source phrases—roughly those that imply the consent of the source—rank higher than themes in Japanese. Presumably this follows from the fact that such sources are exercising volition, and hence count as a kind of (secondary) agent.

were associated with particular syntactic positions in an absolute sense. However, many other researchers assume that only the relative positions of the arguments are important. On this view, it does not matter exactly what syntactic position (say) a theme phrase is generated in, as long as it is higher than any goal phrase and lower than any agent phrase in the same clause. We may call a condition of this kind the Relativized UTAH, or RUTAH. Larson's (59) is a form of RUTAH, as he makes explicit in Larson (1990). Similarly, Grimshaw's (1990) arguments concerning the thematic hierarchy reviewed above assume something like a RUTAH; see also Belletti and Rizzi (1988), Speas (1990), Li (1990), and most other work that uses a thematic hierarchy. In investigating this issue, I look first at the evidence that seems to require a RUTAH, and then at some evidence that points in the opposite direction.

4.2.1 Evidence for a Relativized UTAH

Many different reasons have been proposed for adopting the RUTAH rather than the UTAH. For example, Larson (1990) does so for certain theoretical reasons that do not necessarily arise in my approach.[34] However, Speas (1990:73) expresses perhaps the clearest reason that needs to be considered—the fact that in some cases the expression of arguments seems to be context-dependent. The example she cites involves the recipient role, which may be a subject (as in (63a)), but only if there is no agent present in the clause (as in (63b)).

(63) a. John received a package from Baraboo.
b. Mary sent a package to John from Baraboo.

This seems to be a counterexample to the UTAH, but is consistent with a RUTAH that says that agents rank higher than recipients. Similarly, it is well-known that instruments can appear in the subject position in English, but again only if there is no agent.

(64) a. John loaded the truck with a crane/pitchfork.
b. The crane/*pitchfork loaded the truck. (Levin 1993:80)

Grimshaw (1990) has a similar conception in mind when she points out that there are no syntactic differences between transitive psych verbs like *hate* and ordinary agent-patient verbs like *kill*, even though the particular thematic roles seem to be different. This follows if syntax is sensitive to the relative rankings of the thematic roles, but not their exact value.

(65) a. Mary hates John.
b. Mary killed John.

However, an absolute version of the UTAH can still be maintained in the face of such examples if one adopts Dowty's (1991) idea that the basic thematic roles are prototype concepts rather than categorically defined ones. On this view, it is possible to say that *John* in (63a), *the crane* in (64b), and *Mary* in (65a) are all (proto-)agents, and as such belong in the subject position. This is justified by the fact that each of these NPs shares certain semantic entailments with the prototypical agent *Mary* in (65b), although they do not all share the same ones. For (64b), in particular, there is good reason to think that the subject is a slightly peculiar agent/causer rather than an instrument; this makes it possible to explain why some artifacts can appear as subjects, but others cannot. Both a pitchfork and a crane are equally good instruments in (64a), but only the crane can be seen as having the kind of quasi-independent causing role necessary to be considered an agent. The situation is less clear with *hate* and especially *receive*,

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[34]Specifically, Larson needs the RUTAH in order to maintain his view that adjuncts are innermost arguments, and because he projects theme NPs in adjoined positions in dative shift structures. I do not adopt either of these positions. On my view, the landing site of dative movement is Spec, AspP, not Spec, VP, so there is no competition with the theme for the Spec, VP position (see (24) and note 18).

but both typically have animate subjects whose internal properties partly determine whether the eventuality occurs or not (Mary's personality in the case of *hate*; John's decision to accept the item in at least some uses of *receive*). In contrast, *John* is a goal, not an agent in (63b) and *the knife* is an instrument, not an agent in (64b); hence they show up in PPs.

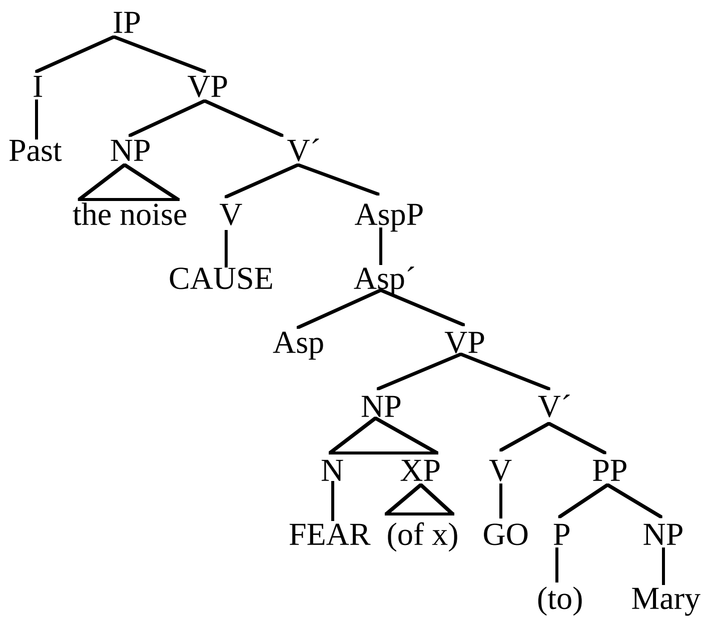
Of course we must still explain *why* John can be an agent in (63a) but not in (63b). Dowty's answer is that the event expressed by (63b) contains a better candidate for proto-agenthood, namely Mary; she has more agent-like semantic entailments. Thus, adopting this line does not eliminate all relativity from the analysis. Rather, it moves the relativity from the statement of the UTAH into the cognitive realm of what is perceived as an agent. RUTAH theories say that recipients can be subjects only in the absence of agents because agents outrank recipients; the prototype theory says that certain participants in an event are less prone to being seen as agents than others are, but the one seen as an agent is always the subject. The question is not whether a degree of relativity is necessary or not, but rather at what stage the relativity comes into the picture.

Perhaps the most sophisticated, closely argued, and impressive use of the RUTAH is Belletti and Rizzi's (1988) analysis of psych verbs in Italian. The basic challenge posed by this class of verbs has already been discussed in section 2.1: in short, it stems from the fact that nearly-synonymous verbs seem to have different linking patterns only in this narrow semantic domain. The RUTAH gives Belletti and Rizzi the flexibility that they need to develop an elegant syntactic solution to this problem. Their idea is that the experiencer argument of every psych verb must be generated in a higher syntactic position than the "theme" argument (or, better, the stimulus). For *fear*-class psych verbs, the experiencer is inserted into the normal subject position, and little else happens. However, the experiencer of *frighten*-class psych verbs is generated further down, leaving the subject position open for the stimulus argument to move into. Belletti and Rizzi support their analysis with a series of empirical arguments that show that the structure of clauses with *frighten*-class verbs is not as simple as it seems, but involves a nontrivial syntactic derivation.

For the simplest facts of *frighten*-class verbs, the appeal to the RUTAH can be replaced by Dowty's prototype conception of agenthood, as before. We can say that the stimulus is seen as the cause of a certain (change of) state in the experiencer with *frighten*, though not with *fear*; it therefore qualifies as an agent/causer, and is inserted into the subject position by the normal projection rule, as argued by Pesetsky (1987, 1995) and Dowty (1991). However, the task is not complete, because we still owe Belletti and Rizzi an account of why *frighten*-verbs have so many syntactic peculiarities (see also Grimshaw (1990:19-25)). Dowty (1991) ignores these peculiarities, and Pesetsky (1987) puts them aside as semantic.

Here is a tentative proposal that has the right general character. Part of the difficulty with psych verbs is that it is not clear what kind of lexical/thematic analysis to assign them. So far, I have assumed that *frighten* means basically "x cause [y to be in FEAR (with respect to z)]". Such a conceptual representation should give rise to an ordinary transitive clause. Suppose instead that its lexical semantic representation is more like "x cause [[FEAR (of z)] to go to y]". Here "fear" is conceived of as an abstract thing that goes into the experiencer, rather than an abstract state that the experiencer enters. The stimulus is the causer, as before, but now the experiencer is a type of goal, rather than a type of theme, that role being taken by the emotion itself. Each element of this account can be motivated by superficial morphology in some languages: *frighten*-class verbs are often causatives morphologically (e.g., in Japanese (Pesetsky 1995:7, 46-47)); experiencers often bear dative Case identical to that of goals (e.g., many South Asian languages) ; psych predicates are often nominal rather than verbal (e.g., Palauan (Georgopoulos 1987), Warlpiri (Simpson 1991)). Then, by normal rules of projection, one gets (66).

(66)



Several things then happen to this basic structure. First, the abstract elements FEAR, GO, and CAUSE somehow combine to give *frighten*. I leave open whether this is done by incorporation in the sense of Baker (1988a) applying in the syntax, followed by late lexical insertion along the lines of Halle and Marantz (1993), or whether the combination happens by a kind of pre-syntactic incorporation as in Hale and Keyser (1993) (but see section 5). Second, dative shift takes place just as in (24), incorporating the preposition into the predicate and moving its object into Spec, AspP.

This proposal goes a long way toward explaining the peculiarities of the experiencer-object that have been noted in the literature; it has very much the same properties as the goal object of a double object construction. For example, Belletti and Rizzi (1988) show that the object of a *frighten*-type verb is a mild island for movement processes in Italian, an effect that is also detectable in English:

(67) a. ?Which company does international unrest frighten [the president of t].
b. Which company does the international community fear [the president of t]?

The awkwardness of (67a) can be attributed to a Left Branch Violation (compare *??Which company did John give the president of a bribe?*). Similarly, the literature shows that *frighten*-class verbs in English cannot be nominalized (**the movies amusement of the children*, Grimshaw (1990:118-23), also Rappaport (1983), Pesetsky (1995)), they cannot form synthetic compounds (**a child-frightening storm*, Grimshaw (1990:15-16, 25), and they do not have unaccusative variants (**Mary frightened*, Grimshaw (1990:36), attributed to M.-L. Zubizarreta). In all of these ways, *frighten*-class verbs are like dative shift verbs.[35]

Finally, there are certain questions about the stimulus subjects of these verbs. Belletti and Rizzi (1988) show that they have several properties normally associated with derived subjects, the most striking of which is that something in the subject can be anaphorically dependent on the direct object:

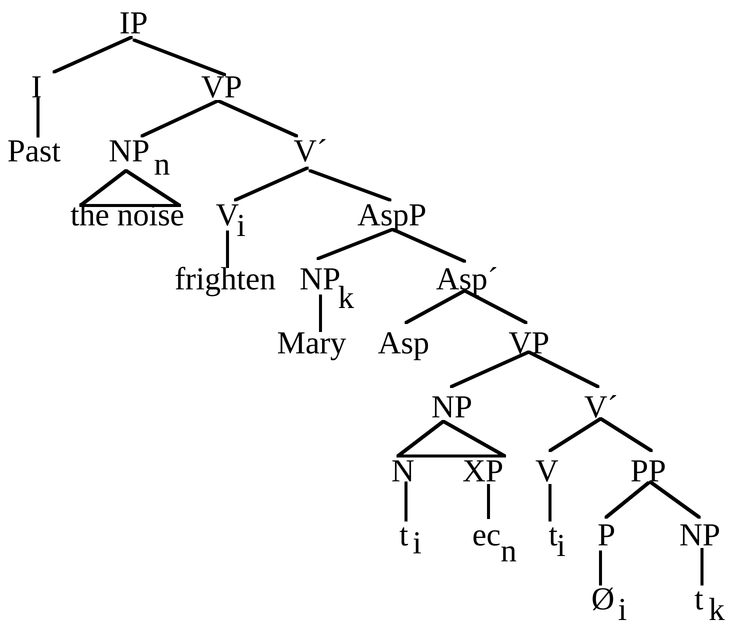
(68) a. *Each other's friends like John and Mary

[35]My judgments of *frighten*-class verbs with resultative AP predicates are mixed. Most freely formed expressions sound rather bad, as the theory predicts: **She was depressed, but the clown amused her happy, *The loud noise frightened John dead*. However, certain semi-idiomatic expressions are perfect, as are some non-AP predicates: *The economic situation worried Mary sick*, *The loud noise frightened John to death.*

b. (?)Each other's friends worry John and Mary

On the other hand, Pesetsky (1995) and Grimshaw (1990) show that the stimulus subject also has certain properties of a base-generated subject. Borrowing liberally from Pesetsky (1995), we could potentially resolve this contradiction by saying that the stimulus subject is indeed base-generated in the agent-subject position, but it shares some properties with derived subjects by virtue of binding an empty category that is the argument of the abstract noun that characterizes the emotion. Semantically, this is rather natural; the most obvious reading of *The noise frightened Mary* is that the noise caused Mary to have fear of the noise itself (but see Pesetsky (1987, 1995) for other, putatively different readings). Thus, the derived structure of (66) is (69).

(69)



Here, the stimulus subject can be anaphorically dependent on the experiencer object because even though it is not c-commanded by the object, it is linked to a position that is (see Barss (1986)). There would be many important theoretical problems to face in fleshing out this analysis[36]; however, it seems to have approximately the right cluster of properties to explain the behavior of *frighten*-class psych verbs, as well as being consistent with an absolute UTAH.

4.2.2 Reasons for an Absolute UTAH

So far, we have surveyed some of the reasons for holding a relativized version of the UTAH, and have seen that they are not necessarily conclusive. Now let us see if there are reasons to prefer an absolute version of the UTAH.

One obvious place to look for evidence distinguishing the two is the syntax of verbs that take a single nominal argument. For such verbs, the RUTAH strictly speaking puts no restrictions on how the single argument is expressed in the syntax. For example, if a verb has only an agent argument, the RUTAH in (59) requires only that the agent c-command all of its

[36]Among them are: What kind of empty category is the ec in (69)? Does the stimulus subject form a chain with this empty category? (If so, then the chain has two thematic roles; if not, then the dependency should not count for binding purposes, given standard assumptions) Why is dative shift obligatory with these verbs—even in Romance, where dative shift does not otherwise happen? A hint concerning this last question may come from Green's (1974) observation that dative shift is obligatory even with *give* when there is a stimulus subject and/or an abstract theme. Thus, one can say: *The loud noise gave Mary a scare*, but not *??The loud noise gave a scare to Mary*.

co-arguments. This condition is satisfied trivially, even if the agent is generated as an immediate complement of the verb, because it has no co-argument by hypothesis. Conversely, a verb that has only a theme argument could project that argument into a high structural position; it would still be the lowest argument in the clause. In contrast, the absolute UTAH says that these variations are not possible. As such, it automatically induces the so-called Unaccusative Hypothesis: the idea that the sole argument of an agentive intransitive verb is a subject at all levels, but the sole argument of a nonagentive intransitive verb is generated as an initial object (Perlmutter 1978, Burzio 1986). Therefore, if the Unaccusative Hypothesis is true universally, this supports the UTAH over the RUTAH.

In fact, Perlmutter's Unaccusative Hypothesis is now widely accepted in P&P-style theories, and has proved to be a very productive idea in the analysis of many different kinds of languages. There has been some debate about whether it is true universally, and about whether the unaccusative predicates of a given language can be predicted on universal lexical semantic grounds (see Rosen (1984)). The UTAH is committed to a positive answer to both of these questions, and the bulk of current work tends to support this, once one is adequately sophisticated in one's treatment of lexical semantics and the syntax of particular languages. For example, Levin and Rappaport Hovav (1995) show that, once the details of lexical semantics are attended to, which predicates are unaccusative and which are unergative is quite consistent across a range of well-studied languages, including English, Dutch, Italian, Hebrew, and Russian. At the same time, more and more work is accumulating that shows how insightful analyses of phenomena in less-studied languages can be given if the Unaccusative Hypothesis is accepted, supporting the idea that it holds universally. I mention only a few instances from languages already mentioned in this article: Baker (1995b) finds five differences between unergative and unaccusative verbs in Mohawk: (i) the argument of an unaccusative verb but not an unergative verb can be incorporated; (ii) the quantifier *eso* 'many' can be floated off of the argument of an unaccusative verb only; (iii) benefactive applicatives made from unergative verbs can have a transitive agreement prefix, but those made from unaccusatives cannot; (iv) morphological causatives can be formed from unaccusatives only; (v) morphological purposive constructions can be formed from unergatives only.[37] In Chichewa and other Bantu languages, unaccusative verbs allow a locative inversion construction in which a locative expression becomes the surface subject (Bresnan and Kanerva 1989); however, benefactive applicative constructions cannot be formed from unaccusative verbs except under special circumstances (Alsina and Mchombo 1988, Machobane 1989). In West African languages, unaccusative verbs but not unergative verbs can appear as the second verb in certain kinds of Serial Verb Constructions (Baker 1989). And so on. Thus, while there are still languages in which there is little or no known evidence for the Unaccusative Hypothesis, they are becoming fewer and fewer. Moreover, I am not aware of any empirical arguments *against* the Unaccusative Hypothesis in a particular language.

The major remaining controversy concerning the Unaccusative Hypothesis is whether the phenomena attributed to it should be explained in terms of syntactic structure or in terms of semantic conditions. In most cases, a P&P account of such phenomena comes in two phases: first the meaning of the clause determines whether the argument of the verb is inserted in a direct object position or in a subject position, and then syntactic conditions defined over the resulting structural configuration determine whether a given operation is possible or not—for example, whether one can add a resultative predicate in English, or whether a partitive *ne* clitic can be extracted in Italian, or whether an impersonal passive is possible in Dutch. Given the logic of this situation, it is natural to ask whether one can cut out the middleman by stating the relevant conditions directly in terms of the meaning of the clause. This line of argument is developed by

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[37]Significantly, the feature of Mohawk that looks at first like it will give the easiest evidence for the Unaccusative Hypothesis—the split agreement pattern on intransitive verbs—turns out *not* be an unaccusative diagnostic (Baker 1995b:ch.5). I believe that the unreliability of this kind of superficial morphological evidence has contributed greatly to the impression of Rosen (1984) and others that unaccusativity involves a substantial degree of idiosyncrasy.

Zaenen (1993) for Dutch, and Van Valin (1987, 1990) for Italian. If it is successful, then the unergative-unaccusative distinction might not support the UTAH after all.

Levin and Rappaport Hovav (1995) examine this issue at some length, and formulate a reasonable reply to it. Given that unaccusativity is determined by lexical semantics, it will nearly always be possible to state *descriptively adequate* rules that have purely semantic conditions . The question, however, is whether such a theory will be able to *explain* why those conditions hold. In several interesting cases, the semantic-based conditions look ad hoc, whereas syntactic-based conditions seem to uncover interesting connections with other phenomena, and thus achieve a greater level of generality. The particular case Levin and Rappaport Hovav examine in some detail is resultative secondary predication in English, which is possible with unaccusative verbs (*The river froze solid*) but not unergatives (**John laughed sick*). Grimshaw (1990:42) makes the same point with respect to *ne*-cliticization in Italian: she claims that Van Valin's analysis is essentially stipulative, whereas the kind of analysis offered in Belletti and Rizzi (1981) unifies this phenomenon with other instances of syntactic movement—including noun incorporation, morphological causatives, subject-auxiliary inversion in English, and ultimately perhaps even the subject-object asymmetries found with *wh*-movement (Baker 1988a). It is very unlikely that a substantive semantic condition could give a unified account of this range of phenomena, whereas a syntactic condition involving locality relationships between a trace and its antecedent can. Thus, Levin and Rappaport Hovav conclude that unaccusativity is semantically determined and syntactically represented. If so, then the absolute UTAH is supported.

Given then that the Unaccusative Hypothesis is true, we should reconsider whether it is really impossible to capture it in a RUTAH-based framework. Of course it is not. For one thing, one could stipulate the Unaccusative Hypothesis as an extra condition in addition to the RUTAH; this is approximately the view of Grimshaw (1990). A more attractive way to proceed is to try to reduce one or the other class of intransitive verbs to a transitive construction. One possibility is that unergative clauses are really transitive clauses with some kind of covert theme-object; the presence of this object then forces the agent to be external. Chomsky (1995:247-48) adopts this as a way to capture the difference between unergatives and unaccusatives in his highly impoverished "bare phrase structure" theory, building on Hale and Keyser (1993). Alternatively, one could say that unaccusative clauses are really transitives with a suppressed agent; the presence of this agent forces the theme to be relatively internal, as in transitive clauses (see Levin and Rappaport Hovav (1995), building on unpublished work by Gennaro Chierchia). However, neither of these proposals is very well motivated empirically: one simply does not see cognate objects with all unergatives in most languages, nor are unaccusatives consistently derived from transitives morphologically. Furthermore, both of these methods of reducing intransitive clauses to transitive ones would need to be supplemented with an explanation of *why* an agent cannot be projected into syntax without a theme or vice versa. Thus, I conclude that the absolute UTAH is a preferable approach to unaccusative phenomena, assuming that it is otherwise tenable.

The Unaccusative Hypothesis concerns the representation of agents and themes. In principle, one should be able to raise the same kinds of questions concerning themes and goals: Must a goal be the innermost complement of V even when there is no theme? Must a theme be the specifier of the inner VP even if there is no goal? This is harder to evaluate, both because there are not many syntactic differences between the two VP internal positions, and because the presence of the preposition with the goal complicates the issues. However, there is some evidence that points to an absolute version of the UTAH in this domain as well. In (61), I showed that the Edo verb *hae* 'pay' can share its theme argument with a higher verb in a Serial Verb Construction, but it cannot share its goal argument in the same way; this was interpreted as evidence that themes are structurally higher than goals. Now it so happens that *hae* can also appear without the theme argument in a sentence like 'Kate paid Julia.' Nevertheless, its goal argument still cannot be shared with the higher verb; (61b) is ungrammatical even when the theme NP is omitted. This suggests that the goal must be strictly in the smallest projection of V, regardless of whether there is a theme present as well. A similar case is (48) in Mohawk, which

shows that themes but not goals can incorporate into the verb. Now, the theme argument of *nut* 'feed' in Mohawk is optional. Thus, if the RUTAH underlay these facts, one might expect that when the theme is omitted, the goal phrase could be projected in the position normally reserved for the theme, and then could incorporate from their. This is false: (48b) is ungrammatical even if *o'wahru* 'meat' is omitted. Facts like these suggest that it is not competition with the theme that forces the goal into its peculiar syntactic position, but rather some absolute requirement on goalhood.

Possibly relevant data from English comes from the so-called conative alternation, in which the verb has two arguments, one of which is an agent-subject and the other of which can be realized as either an NP or a PP (Levin 1993:41-42).

(70) a. I stabbed the loaf of bread (with a knife).
b. I stabbed at the loaf of bread (with a knife).

If the RUTAH were true, one could imagine this alternation being semantically vacuous: since there is only one non-agent argument, it can assume either the direct object position or the indirect argument position freely. (Note that the preposition in the conative alternation is fixed as *at* for most verbs, and therefore can be considered semantically redundant.) However, the alternation is clearly not semantically vacuous: rather, (70a) entails that my knife actually made contact with the bread and probably penetrated its surface, whereas (70b) only entails that the bread was the target of my stab. Since the direct object in (70a) is affected by the event, it is reasonable to consider it a theme, while the PP in (70b) is more like a goal. Therefore, (70) actually shows that themes systematically show up as direct objects and goals as PP complements, even in the absence of another internal argument. This again supports the absolute version of the UTAH.[38]

4.3 Thematic Roles and Aspectual Roles

The last issue concerning the formulation of the UTAH I will consider is whether it is thematic roles that determine the syntactic position of arguments, or whether it is aspectual notions that do so (Tenny 1994, McClure 1994, Borer 1995). Roughly speaking, aspectual notions are those that are involved in expressing the state of completion of the event referred to by the verb: whether it is completed, in progress, continuing, repeated, and the like. The idea that aspectual roles might play a key role in linking theory grows out of the convergence of several lines of research. The first is investigations of the locative alternation, where the argument that "measures out" the event is the direct object in both versions, in spite of the fact that in other respects the same kind of situation is described (see section 3.1). The conative alternation just discussed is similar in this respect: the internal argument measures the progress of the event when it is a direct object but not when it is oblique. Facts like these lead Tenny (1987, 1994) to the conclusion that there

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[38]The one semantically vacuous NP-PP alternation in English is dative shift. However, this is usually blocked when no theme is expressed: one has *I read to the children* but not *#I read the children, I baked for Mary* but not *#I baked Mary*. These facts are more consistent with the UTAH than the RUTAH, but missing is an account of why dative shift is barred here. One possibility is that the theme is present as some kind of empty category, and this must reach the specifier of Aspect Phrase position to be properly licensed. If so, then the goal cannot move to that position.

There are a few exceptions to this generalization, including *teach, pay, feed, serve, write*; thus, one can say *I taught the children* and *I fed the children*. In fact, when these verbs have no theme, the "goal" NP loses most of the syntactic properties associated with goal objects: for example, it can be in a derived nominal, an adjectival passive, or a synthetic compound (Wasow 1977). See also fn. 14, 23, and 38. Note furthermore that some of these verbs in Romance languages alternate between having a dative argument and an accusative argument (Borer 1984, citing Eric Werli), even though the these languages do not have dative shift. Finally, it is probably significant that these verbs are morphologically causatives in many languages: 'teach' is literally 'cause-to-know', and 'feed' is 'cause-to-eat' (cf. Green (1974)). Put all together, these facts suggest that the animate argument of these verbs may be a theme when there is no other internal argument.

is a close relationship between being a syntactic direct object and performing this kind of aspectual role. A second thread comes from the Van Valin-Zaenen observation that some of the putative differences between unaccusative verbs and unergative verbs actually boil down to differences in the aspectual notion of telicity (roughly, whether the event reaches a natural conclusion or not): telic verbs are unaccusative, and atelic ones are unergative (see also Tenny (1994), Grimshaw (1990), Borer (1995)). The third thread comes from the domain of psych verbs, where some researchers who have not recognized a *thematic* distinction between the *fear*-class and the *frighten*-class have recognized an aspectual difference: *frighten* may refer to an inchoative, caused change of state (an accomplishment or achievement), whereas *fear* is stative. These lines of research converge into Tenny's (1987, 1994:115-16) Aspectual Interface Hypothesis (AIH):

(71) *Aspectual Interface Hypothesis*
The universal principles of mapping between thematic structure and syntactic argument structure are governed by aspectual properties related to measuring-out. . . . Only the aspectual part of thematic structure is visible to the universal linking principles.

More specifically, Tenny (1994:ch. 1) argues that the argument that measures the progress of an event must be a direct object, the argument that defines when the event is over must be an oblique internal argument, and an external (subject) argument cannot play any role in measuring out or delimiting the event described by the verb. The question then is whether it is aspectual roles or thematic roles that determine underlying syntactic structure.

In fact, this may be more a terminological question than an empirical one, depending on one's theory of aspect and thematic roles. Thus, Tenny presents the AIH not so much as an alternative to the UTAH, but as a refinement of it; it defines which facets of a rather rich thematic/conceptual representation can be relevant to syntax. She points out that there is a close and nonaccidental correlation between the Gruber/Jackendoff notion of a theme, and her notion of a Measure argument. The theme of an event is the participant that undergoes a change of location or state in the event; as such, the position of that participant in space or its physical properties provide a suitable measure of the progress of the event toward completion. Similarly, there is a close connection between the goal thematic role and Tenny's "terminus" aspectual role. If these close correlations were to become true equivalencies by a refinement of either theory, then there would be no difference between the UTAH and the AIH. Indeed, some of the differences that Tenny points out crucially assume that thematic theory is relatively fine-grained, and makes a variety of distinctions that are not relevant to linking (e.g. agent vs. instrument, benefactive vs. malefactive). However, I have argued for a rather coarse-grained thematic theory—one that distinguishes about the same number of thematic roles as Tenny has aspectual roles. This decision contributes further to the convergence of the two ideas. Therefore, one can expect the differences between an aspect-based theory and a thematic-based theory to be few.

A close look, however, may reveal that there are some. Levin and Rappaport Hovav (1995) explicitly consider this issue as it applies to intransitive verbs. They discover that the connection between aspect and unaccusativity is not as tight as has been claimed. (72) shows that clauses with unaccusative verbs can be either telic or atelic, as shown by the standard test of whether the clause is compatible with the adverb *for X time* (atelic) or *in X time* (telic).

(72) a. The ball bounced/rolled/spun for five minutes/#in five minutes. (atelic)
b. The soup cooled/the train descended for five minutes/in five minutes. (telic/atelic)
c. The vase broke/shattered/arrived #for five minutes/in five minutes. (telic)

Conversely, unergative verbs are often atelic activities, but examples like (73b) are telic (McClure 1994).

(73) a. Mary snored for an hour/#in an hour. (atelic)
b. Mary won #for an hour/in an hour. (telic)

Levin and Rappaport Hovav also show that the state/event distinction is not relevant to determining which verbs are unergative and which are unaccusative. For example, they show that posture verbs like *sit, stand,* and *lean* are unergative when they take animate subjects and have a "maintain position" meaning (*Mary stood in line for an hour*) but they are unaccusative when they take inanimate subjects (*The stature stood in the park for 50 years*). Here there is a clear difference in agency (i.e. whether the event is internally caused), but no difference in aspect: both uses of *stand* are stative. Similar remarks hold for verbs of light and smell emission, they claim. This broader range of examples thus suggests that aspectual distinctions do not determine the underlying structure of a clause, but something more like thematic roles does.[39]

This issue can also be investigated in the area of transitives. Here too there is reason to doubt that reference to thematic roles can be replaced by reference to aspectual notions. Tenny (1994) discusses the fact that while all "measure" arguments are direct objects, not all direct objects are "measures". Thus, (74a) is a telic event, with the cart providing the measure, but (74b) is an atelic event with no measure argument.

(74) a. John washed the cart in half an hour.
b. John pushed the cart for half an hour.

Thus, Tenny's aspect-based linking rules determine which argument of the verb is its direct object in (74a), but they do not extend readily to determine which is the object in (74b). This seems like a failure to capture an important generalization, since the linking in (74b) is clearly not accidental. In contrast, it is easy to state generalizations that cover both (74a) and (74b) in thematic terms: John is clearly the agent/causer of the event in both cases, while a change is asserted of the cart in both cases (a change of state in one case, a change of position in the other). Many other instances of this kind arise, where the same clause is ambiguous between an activity and an accomplishment reading, but the grammatical functions remain constant.

A third potential difficulty for aspect-oriented approaches to linking is that it is not clear whether they can be extended to account for stative transitive verbs. Tenny (1994) explicitly puts stative predicates aside in most of her discussion, conjecturing that there are in fact no universal linking principles that apply in such cases (see especially pp. 129-30, n. 35). Similarly, Grimshaw (1990:29-30) points out that her aspect-based theory of psych verbs faces a problem that stems from the fact that *frighten*-class verbs may (and sometimes must) have stative readings; these clauses cannot be distinguished aspectually from *fear*-class verbs, which are also stative, even though the linking pattern seems different.

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[39] In fact, Levin and Rappaport Hovav's (1995) linking rules do not use thematic roles, either; their view is that thematic roles should be eliminated (or defined) in terms of Lexical Semantic Structures. However, their substantive linking rules can be interpreted thematically without too much difficulty. They are stated as follows:

(i) <u>Directed Change Linking Rule (DCLR):</u>
The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.

(ii) <u>Existence Linking Rule (ELR):</u>
The argument of a verb whose existence is asserted or denied is its direct internal argument.

(iii) <u>Immediate Cause Linking Rule (ICLR):</u>
The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument.

(They also propose a default linking rule, omitted here.) The DCLR is very similar to the statement that themes are direct objects; it almost repeats the original Gruber-Jackendoff definition of what a theme is (with a slight refinement). Similarly, the ICLR generalizes the statement that agents are subjects to a somewhat broader range of causes. Finally, there seems to be no inherent barrier to collapsing the DCLR and the ELR into a single rule, given that they are unorderable, and the arguments of some verbs are redundantly classified as internal arguments by both.

(75) a. This dog frightens/pleases John.
b. John fears/likes this dog.

In contrast, it is at least conceivable that a thematic account of the linking patterns in (74) could be extended to explain the patterns in (75) in a unified fashion, presumably by making use of Dowty's (1991) idea that agent and theme are prototype categories. Such an account would capitalize on the subtle but real intuition that (75b) comments more on John's character and tastes, while (75a) comments on a particular quality of the dog, in the way sketched in section 2.1. If this line is successful, it confirms the intuition that linking in stative predicates is not accidental, even though it cannot be determined in purely aspectual terms.

4.4 Summary: the UTAH

This section has explored three prominent controversies concerning linking theory and the exact formulation of UTAH-like principles. My conclusions have been that the UTAH is sensitive to a medium-coarse grained version of Theta theory, one that distinguishes three primary (proto)-roles: agent/causer, theme/patient, and goal/path/location. The conditions that it puts on the structural realization of these roles seem to be absolute, rather than relative, and they map the theme to a higher position than the goal. Finally, aspectual notions converge with thematic ones in an important range of cases, but seem not to be adequately general. With these insights in hand, we can finally state the linking principles that give content to the UTAH:

(76) (i) An agent is the specifier of the higher VP of a Larsonian structure.
(ii) A theme is the specifier of the lower VP.
(iii) A Goal, path or location is the complement of the lower VP.

These rules are extremely simple; the substantial complexities of the data stem from the possibility of NP-movement in unaccusative clauses and dative shift configurations, and from choices that arise when categorizing the participants of a particular event into thematic roles.

5. The meaning of the UTAH and its place in grammar

Now that we have an established version of linking theory to consider, this final section presents some tentative reflections on what it might mean for linguistic theory and for the relationship between language and other aspects of the mind. At stake is the question of whether the UTAH should be stated as an explicit principle of human language, as has been done so far, or whether it is rather an indirect reflection of the basic architecture of this aspect of human cognition. For concreteness, the discussion will be couched in terms of the Minimalist Program, Chomsky's (1995) recent house-cleaning and re-evaluation of the Principles and Parameters theory, in which every aspect of the theory of grammar is held up to the test of whether it can be justified in terms of "virtual conceptual necessity." However, the specific points that arise from this kind of inquiry should be of more general interest.

Before raising technical matters, one should ask whether something like the UTAH is "in the spirit of" the Minimalist Program. While Chomsky himself has been relatively silent on this question, I believe that the answer is clearly yes. A leading idea of the Minimalist Program is that there should be a natural interface between the representations computed by the language faculty and the performance systems that use those representations. Indeed, Chomsky conjectures that much of the observed structure of language is motivated by the goal of meeting this kind of "bare output condition" in an optimal way. In particular, there should be a natural interface between the level of LF and what Chomsky calls the "Conceptual-Intentional system" (C-I). The UTAH can be seen as part of the theory of this interface. If one follows the common practice of assuming that thematic roles are part of the conceptual system, then the UTAH asserts

in essence that there must be a homomorphic, perhaps even an isomorphic relationship between this aspect of the conceptual system and the corresponding linguistic representation.

One can make a useful comparison between the UTAH and the Theta Criterion of Chomsky (1981) in this regard. Chomsky (1993) points out that the Theta Criterion is trivially true at the level of LF as it is understood in the Minimalist Program: if functors (such as verbs) do not take the right number of arguments (such as NPs), the system "crashes", failing to produce something with a usable interpretation. However, it is also true that if a functor takes more than one argument, it must have some way to tell which argument is which; this is necessary in order to distinguish restaurant reviews ("Man eats shark") from suspense movies ("Shark eats man"). The UTAH performs this function of distinguishing the different arguments of the verb by way of virtually the only method available in Chomsky's very spare system: it "merges" the arguments into the representation at systematically different points.[40] Therefore, there does seem to be a place for the UTAH within the limits of "virtual conceptual necessity."

Keeping the role of the UTAH in mind allows us to resolve certain conflicts between the Minimalist Program and the original versions of the UTAH. The most obvious conflict stems from the fact that Baker (1988a) stated the UTAH as a condition that held at the level of D-structure, prior to any movements. Chomsky (1993), however, argues that there should be no such level: it is not required by "virtual conceptual necessity," there were few substantive principles that held uniquely at D-structure, and certain paradoxes disappear once one is allowed to do movements and merges in any order. If this is correct, then the UTAH is either false or it is enforced at some other point. In fact, realizing that conceptually the UTAH is part of the theory of the relationship between language and the C-I system tells us where it should fit in the grammar: like the Theta Criterion, it should be understood as an output condition on LF, the interface level related to C-I.[41] There is one slight complication: to apply the UTAH at LF one must say that it looks not at simple NPs, but rather at the tails of chains, in order to factor out the effects of movement. However, this is no real difficulty, since chains are taken to be the fundamental LF objects in this system in any case (Chomsky and Lasnik 1993).

The second way in which specific Minimalist proposals seem to impact negatively on the UTAH concerns Chomsky's (1995) adoption of a "bare phrase structure" system. In short, Chomsky proposes to eliminate all reference to different bar levels, thereby removing any theoretical significance from one-bar level categories, and moving to a purely relative definition of X^{o} and X^{max} level categories. Depending on the details, this proposal could undercut the ability to define the kinds of positions needed to state the UTAH correctly. In particular, since "specifier" and "complement" become relative notions, the bare phrase structure system seems more compatible with the RUTAH than with the UTAH (see, for example, section 4.2.2 for Chomsky's approach to the unergative-unaccusative distinction). Furthermore, Baker (1995a) conjectures that the reason linguistic theory seems to make use of exactly three proto-thematic roles is because X-bar theory defines exactly three kinds of positions—sister of X^{o}, sister of X´, and outside XP—so thematic distinctions are neutralized to the point that they fit into this template provided by the language faculty. However, if X-bar theory is in fact derivative (see also Speas (1990)), then this claim cannot be maintained.

This technical question about position types turns out to be related to a deeper conceptual one. Above, I claimed that the function of the UTAH was to show which NP fills which argument slot in the theta-grid of the verb. The question is whether it does so according to an

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[40]Other, more obvious ways of marking which argument is which are not available at LF in the Minimalist Program. For example, linear order is defined only at PF in Chomsky's system, while Case features are uninterpretable and must be eliminated before LF. The idea is that where these exist they are PF reflexes of a more fundamental phrase structure asymmetry. The kind of data reviewed in sections 2 and 3 seems to support this.

[41]An alternative, worth considering, is that the UTAH is built into the inner workings of Merge, the operation that builds phrase markers. Thus, Merge could stipulate that an argument combines with a phrase X only if it discharges the kind of theta role associated with X by the UTAH. As a theory of sentence production, this seems natural, but as a theory of basic linguistic competence it seems clumsy and stipulative compared to the view in which UTAH is a matter of how fully constructed LFs are interpreted by C-I.

arbitrary system or a principled one. To take a special case, is the fact that agents are found in positions external to themes and not vice versa an arbitrary choice made by particular languages, an arbitrary choice made by Universal Grammar, or a natural and principled choice? We have already ruled out the view that it is an arbitrary choice of particular languages by arguing that there are no “deep ergative” languages in the sense of Marantz (1984). It would be desirable to rule out the view that it is an arbitrary choice of Universal Grammar as well.

Ironically, Marantz (1984) also contains the seeds of how to do this, when he proposes that there is a semantic basis for the fact that agents are projected external to themes (at least in English), using data from idioms and other semi-idiosyncratic constructions. Formally speaking, within the (neo-)Larsonian view of phrase structure we have adopted, the agent NP is an argument of a higher verb and the theme NP is an argument of an embedded verb. This Larsonian structure dovetails nicely with work on lexical semantics, which generally decomposes standard transitive verbs into (at least) two predicates along the lines of (77) (Dowty 1979, Jackendoff 1983, Foley and Van Valin 1984, Hale and Keyser 1993).

(77) [x cause [y be/become PREDICATE]]

Here x is defined to be the agent argument and y is defined to be the theme. Given that these predicate decompositions are independently motivated on semantic grounds, it is very attractive to identify the causative part of the lexical semantic representation with the higher verb of the Larsonian shell,[42] and the be/become+PREDICATE part with the lower verb position. This is proposed by Hale and Keyser (1993) and has been adopted by Chomsky (1995:315-16) and many others.[43] If this is correct, then the agent has prominence over the theme not by the extrinsic stipulation of some kind of thematic hierarchy, but by semantic compositionality: the agent is the argument of one predicate, the theme is the argument of another predicate, and the second predicate is an argument of the first. If syntactic structure is a projection of gross lexical semantic structure in this way (and if the lexical semantics of verbs is not grossly different across languages), it follows that there are no deep ergative languages or completely nonconfigurational languages.

In addition to taking away the apparent arbitrariness of the statements concerning where the theme and the agent appear, this approach makes it possible to distinguish unergative verbs from unaccusative verbs within a bare phrase structure system without claiming that either is a disguised transitive. On the semantic version of Larsonian structure, the agent NP is not generated in the higher VP shell because there is no room for it in the lower VP; rather, it is generated there because it is the argument of a CAUSE verb (or configuration), and hence is an agent by definition (Hale and Keyser 1993, Chomsky 1995). This carries over immediately to the case where the agent is the argument of a monadic verb; it will appear in the same position as the agent of a transitive verb, even if there is no theme argument in the lower VP. The three-way contrast between transitives, unergatives, and unaccusatives is therefore represented as in (78).[44]

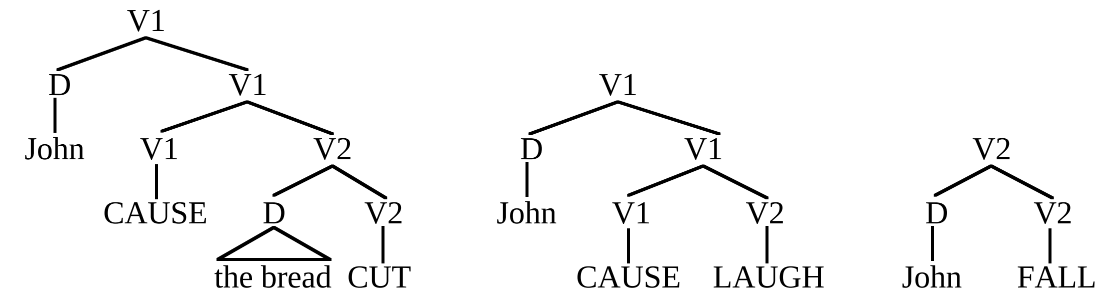
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[42]Larson himself considers the higher V to be a semantically null position, motivated by purely formal requirements of X-bar theory. However, these requirements become unstateable within the bare phrase structure theory. (See also Chomsky (1995) for other Minimalist problems with Larson’s original proposal.)

[43]The idea works nicely for accomplishments in particular. It can be extended to activities, including unergatives, as explained below. The hard case is stative transitives, such as *see* or *like*. These are considered to have a simple lexical-conceptual structures by many authors. I have been assuming that they can be included in the same theory if one uses a prototype approach and thematic rather than aspectual representations. Perhaps a lexical decomposition such as [x cause [y be represented visually/favorably (in x’s mind)]] would be appropriate.

[44]Here I use “bare phrase structure” labels, with no bar levels. Also, functional categories are omitted here for simplicity, including the Aspect which would come between the two verbal projections in the case of a transitive or an unergative. A variant of this proposal would be to say that V2 can only be a state, not an event. Then (78c) would be the representation for (say) *John stinks*, and to get *John fell* one would embed V2 under a monadic V1 that meant BECOME, not CAUSE (Travis, in preparation). Related to this is the question of whether V1 and V2 are members of exactly the same syntactic category, which I leave open.

(78)
a. Transitive: b. Unergative: c. Unaccusative:



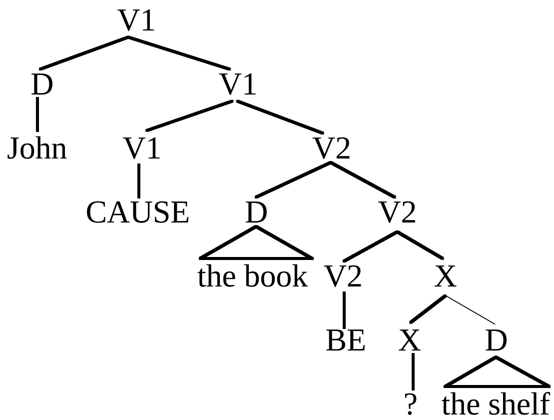
John cut the bread. John laughed. John fell.
[x cause [y be linearly-separated]] [x cause [LAUGH]] [x become DOWN]

These representations follow Chomsky (1995), except for (78b). The idea is that the abstract element LAUGH is a one-place predicate of events; it means that laughter happened. *John laughed* then means that John was the immediate cause of an instance of this kind of event. Thus, (78b) and (78c) are structurally different without positing an otherwise unmotivated nominal cognate object within the V2 of (78b).

If this is the right account of why agents and themes end up where they do, the next question is whether similar considerations can explain why themes have prominence over goals and other path arguments. This question has not often been considered as such, to my knowledge. However, there is reason to think it should be possible. The trick is to propose a suitable semantic decomposition for the state or event that is expressed by the $V2^{max}$. Suppose for concreteness that $V2^{max}$ expresses a state.[45] States can be viewed as a pair consisting of an individual and a predicate, such that the predicate holds of the individual (cf. Kamp and Reyle (1993:673)). The individual in this pair is the theme, by definition. What then is the goal? It must be an argument that helps define the predicate that holds of the individual. For example, *John put the book on the shelf* refers to an event which consisted of John causing a state, where the state consisted of a certain predicate holding of the book, and the predicate was being in a particular position with respect to the shelf. Translating these relationships into a syntactic structure gives (79).

[45]This is adequate for true goals, which define the endpoint of an event, and hence its resulting state. Whether other kinds of paths can also be expressed purely in terms of resulting states is unclear. For example, is it adequate to express *John threw the ball towards the tree* as (John CAUSE [ball BE [closer to tree]]], or does one need [John CAUSE [ball GO [toward tree]]]? If the latter is required, then the text proposal must be generalized to include V2 operators such as the Jackendovian GO function in addition to simple BE.

(79)



Here I assume that BE is a two-place relation that takes a thing and a predicate and creates the corresponding state. I leave open the exact nature of the element X, which takes a thing and creates a predicate; the easiest assumption would be that X is simply the preposition *on*, but one may want to leave room for other kinds of cases.[46] In any case, the theme in (79) has prominence over the goal, because it is semantically a direct argument of BE and the goal NP is only part of an argument of BE. Crucially, I suppose that it would be hard to give a semantic decomposition for a state in such a way that the goal is an immediate constituent and the theme is more deeply embedded. If this is so, then we have a second important convergence between lexical-semantic predicate decomposition and the results of syntactic tests (see section 3).

If this kind of lexical decomposition approach begun by Hale and Keyser and brought into the syntax by Chomsky and others is correct, then the UTAH essentially disappears as a separate condition of grammar. The basic function of the original UTAH was to regulate where the various arguments of a predicate are expressed. This is a nontrivial task if predicates have multiple arguments of the same type, because one must keep track of which NP is associated with which argument position. If, however, syntactic structure is built from the lexical decomposition of a verb, such that each predicate in the decomposition takes a single NP argument, the UTAH becomes trivial. All that remains is a simple convention that an argument must be in a local configuration with its argument-taker; the rest follows from compositional semantics. We have then reduced the UTAH to a matter of “virtual conceptual necessity”.

As a final remark, it is worth pointing out that there is a slightly different way of interpreting this material that would have substantial ramifications for comparing P&P theory with other approaches to syntax and for assessing the role of language in cognition. Throughout this paper, I have assumed that linguistic representations and conceptual representations are two different things, following a broadly Jackendovian line (Jackendoff 1983, Jackendoff 1990b). Subject and object are syntactic notions, defined by the language faculty, while agent and theme are conceptual notions, defined over conceptual representations. The UTAH says that there must be a natural, homomorphic relationship between the two representations. This is in accordance with Chomsky’s Minimalist conjecture that language is in some sense an optimal way of satisfying “bare output conditions” defined by the language-external systems (Chomsky 1995:219-22). However, it is worth observing that this minimalist conception significantly blurs the distinction between P&P theory and functionalist approaches to language, which characteristically de-emphasize syntax as a separate study and focus on its connections with cognition, lexical semantics, and discourse pragmatics. Moreover, if the relationship between LF and Conceptual structure becomes *too* natural, approaching the status of an isomorphism, it becomes appropriate to question whether there are two representations at all; instead, there could

[46]In work in progress, I explore the idea that the category adjective can be characterized crosslinguistically as an element that fills the X position in a representation like (79).

be only one representation that seen from two different perspectives. Thus, a more radical interpretation of the UTAH could be that it shows that there is no difference between the linguistic level of LF and "Conceptual structure". Researchers like Jackendoff (1983, 1987, 1990b) and Pinker (1989) have assumed that this could not be, because conceptual representations need to be much richer and more complex than syntactic representations are in order to support other aspects of cognition. However, current work in syntax suggests that syntactic structure—particularly LF—is somewhat more complicated than Jackendoff and Pinker have assumed (see, for example, section 3, especially (24), and (66)). If at the same time it could be shown that a somewhat more restrictive conceptual representation than Jackendoff assumes could adequately support other aspects of cognition, identifying the two would become a real possibility. Clearly, linguists alone will not be able to answer this question fully. However, it is interesting that Chomsky himself seems to vacillate between these two positions. Thus, in Chomsky (1994:4), C-I is clearly presented as a performance *system*, distinct from the language faculty, that interprets LFs; on the other hand, Chomsky (1993:2-3) uses C-I as a synonym for LF, referring to a *representation* built by the language faculty.[47] Which of these two positions is the true one could be the deepest question raised by the study of UTAH-like phenomena, with implications for the relationship of language to thought and beyond.

[47] I recognized the difference between these two slightly different usages because of discussion of the matter with Jim McGilvary, who I thank.

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